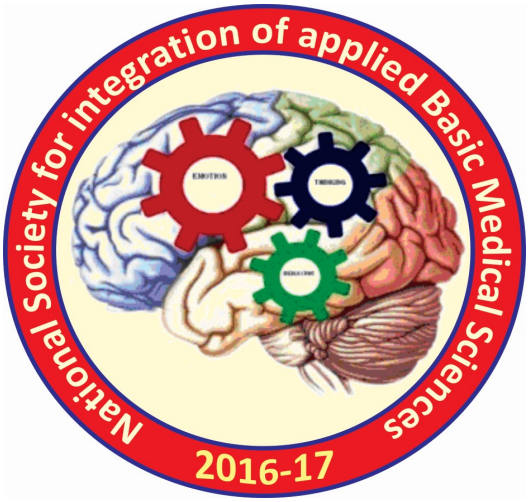

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Editorial

VIRTUAL LEARNING , A new pillar of teaching learning method

Dr Janardan Bhatt

There is no going back. The traditional classroom has to be transformed into virtual class. Web-based Education Commission, US

The mediocre teacher tells. The good teacher explain .The superior teacher explain .The great teacher inspire. Willium Arthur ward

If you find the student not attending the class attentively do not blame yourself , may be the student is addicted to virtual learning. Dr Janardan Bhatt

Learning is a change in behavior as an end result of education process. It is an internal integration between what student already know and what student encounter new information .In terms of physiology it is changes in neuronal synapses in brain. Information technology can and had made major impact on learning . In andragogy model of learning and teaching learning process the teacher is a mere passive facilitator and the student is active learner. This paradigm shift is also true in medical education i.e. education is shifting from teacher centric to student centric where teacher is a facilitator and student is an active learner. Some teacher might still finding difficult to accept the paradigm shift and continue to believe that lectures are the main teaching learning method in medical education .The learning pyramid has very well documented that retention rate with lectures is just less than 10% while with other teaching methods retention rate is many times more. With application of advancement of information technology and wise availability of internet and smart phones in last decade more and more medical students are adopting new learning style i.e. virtual learning and may become the one more pillar of teaching learning method in medical education. There are an evidences for the effectiveness and acceptance of e-learning in the medical education , especially when combined with traditional teacher led activities. Several repositories and e learning material are created and uploaded and available to students . Since 1990s, a new approach called "e-learning" is gradually being adopted by higher education institutions including medical colleges. Virtual learning is a learning process where teacher and students are in different places and with the help of internet and computer technology student learn and enhance self responsibility to learn and also supports individuals to gain lifelong learning attitudes. For greater globalization, for the development of a global common curriculum and training and creating student-centered teaching learning program virtual learning is an essential element of medical education .

It is an era of beyond google the smart google and medical google and so many ... The moment the teacher utter a word in front of students ,students with smart phone will find all possible alternate answer and explanation .Yesterday I was just referring smart class room and smart board ect.. If the students have already experience smart class room , smart board and such things from standard KG and learned rhymes on multimedia how it is a challenge to satisfy the need of such students in medical and higher education. Today challenge of medical teacher is managing virtual learning style of newer students. The answer is virtual teaching learning method.It is not far from reality that one more pillar of *virtual learning* will be added to our existing pillars i.e. problem based learning …and so on….This virtual learning style is one of the few methods which will be available life long. We live in a globally connected world. Digital technologies help us to access virtual content, courses, experiences and people that we might never have thought possible in pass decades.

The virtual learning also known as **Web-based learning** , **Computer-based learning**, **digital learning or e-learning and** require **Internet**, **Extranet/ intranet**, **Audio or video media**, **Satellite TV**, **CD-ROM... The virtual learning is not truly very new. Since 1970s many television channels were broad casting many educational series by education media research center/ EMRC other portal in various parts of India. But still there was barrier of time. Current mode of virtual teaching learning method is beyond barrier of time , space and person .Virtual Education is a learning environment where teacher and student are separated by time and/or space .Teacher provides content through methods like internet, video conferencing, multimedia resources and other course recourse.**

Today when we talk about medical education technologies and advance medical education technologies, we talk about things like ,competency models defined goals ,**measured outcomes – educational and clinical**, **preceptors ,use of simulation ,computer based manikins ,mannequins** ,**continuing medical education ….Virtual teaching learning method can do every thing possible mentioned in medical education technologies .**

Virtual learning is divided into three phases i.e. 1 passive learning , 2 Active learning and 3 Immersive learning . The most important fact of virtual learning is addition interactive learning . One can with text than text with test with or without multimedia together. This make learning more interactive and interesting.

Advantages of virtual learning is enumerable .virtual**-learning have huge cost and time saving**, **Convenient ,Flexible,,Easily updated, Efficient** , beyond time space barrier ,with **adjusted Pacing and e-Simulation** . Even and above one can add **adaptive Learning and edutainment –** combines education with entertainment and gaming. This form of education enables students to be more engaged in the learning process.

Though the virtual learning is not free from obstacles .In beginning there is lots of **Time-consuming creating a teaching learning module and has to pass through so many experts for verification . The module development requires intense hardware and software ,experts time .**And even after gain **trust is an issue of never ending debate. It requires all modern technologies available i.e. computer, laptop,smart phone and multi media ,internet…**

But in context long term gain and benefit virtual learning is not costly on long run. Unlimited students can take benefit beyond time and space and available on demand. Learning path and pace determined by learner. In Virtual learning is teaching -learning is 'one-to-one' ,more interactivity (in normal classroom, it varies with the class size),learner-centered with learner monitoring & grading system.

In this context to virtual learning medical teachers have to walk few mile more . The teacher has to motivate students to use of all available technologies for learning and e**ncourage collaborative learning** . **Motivated teacher must participate and develop knowledge & skills** for developing a peer reviewed virtual learning-teaching material .They must **Understand learning needs of students , facilitate learning** c**reate more learning opportunities** This will a

Lay foundation for Lifelong learning as recommended Medical Council of India. Virtual learning will generate the **Self-directed**, **Self-motivated**, **Self-regulated** e-**Culture.At Administrator level , the administrator should Create Learning environment for virtual learning .The most important components of virtual learning are** eMAIL, Website, Video conference, ***Learning Management System including*** Multimedia .

Further work and studies are needed for expert evaluation validity of content of virtual-learning materials. It should include a peer-reviewed process .The virtual learning process must achieve the learners need, satisfaction, content usability, and demonstration of learning. Faculty' skill in creating digital-learning materials is also incoming demand in era of virtual learning .The integration of virtual teach-learning method into undergraduate, graduate, and continuing, medical education will promote an adult learning in medical education.

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Original article

COMPARATIVE STUDY OF VISUAL EVOKED POTENTIALS IN COPD PATIENTS AND HEALTHY ADULTS.

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Abstract

Background: COPD is a 3rd leading cause of death worldwide. Estimates suggest Prevalence and burden of COPD will increase in coming decades. It is a multisystem disorder that is frequently associated with significant extrapulmonary manifestations. These associations have a significant negative impact over the prognosis and health related quality of life in patients with COPD.

Aim & Objective: The present study is carried out to evaluate effects of COPD on Visual evoked potentials before any clinical signs and symptoms of visual impairment appear.

Method: Study was done in 50 COPD patients having disease duration of more than 5 years with stable course of illness and 50 age and sex matched healthy adults as controls. Pattern reversal visual evoked potential recording was done with monocular stimulation.

Result: There was statistically significant increase in P100 Latency of both eyes in COPD patients as compared to controls. Statistically non-significant decrease in P100 amplitude was seen. Prolongation of P100 latency in COPD patients is due to development of chronic hypoxemia leading to tissue hypoxia causing slower conduction in visual pathway suggesting demyelination.

Key words: COPD, VEP, P100 Latency, Chronic hypoxemia, DemyelinatiNTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a condition of major public health concern [(1)]. The prevalence and burden of COPD are projected to increase in the coming decades due to continued exposure to COPD risk factors and the changing age structure of the world's population [(2)]. Crude estimates in 2012 suggested that there were 30 million COPD patients in India [(3)]. The COPD prevalence varied from 3% to 8% among Indian males and approximately 2.5% to 4.5% among Indian females [(4).] Numerous previous studies and case reports illustrate the association of COPD with co-morbidities like cardiovascular diseases, osteoporosis, skeletal muscle dysfunction, cognitive dysfunction, psychological problems such as anxiety, depression. These associations have a significant negative impact over the prognosis and health-related quality of life in patients with COPD. In some studies, COPD patients showed electrophysiological evidence of peripheral nerve dysfunction [(5,6,7)].

The present study is carried out to detect subclinical visual impairment in COPD patients by using Visual Evoked Potential (VEP) study. VEPs are electrical potential differences recorded from scalp in response to visual stimuli. VEP provide a qualitative and quantitative measure of visual pathway. It measures the conduction of the visual pathways from the optic nerve, optic chiasm and optic radiation to the occipital cortex [(8)].

MATERIALS AND METHODS

Institutional Ethical Committee approval was taken before conducting the study.

The study design involved 100 individuals which can be divided in two groups.

Group I –Diagnosed patients of COPD as per GOLD criteria, (n=50)

Group II –Age & sex matched normal healthy adults (n=50).

The following clinical features were considered during diagnosis of COPD [9] –

1. Dyspnea
2. Chronic cough
3. Chronic sputum production
4. History of exposure to risk factors
5. Family history of COPD.

Spirometry was done to confirm the diagnosis of COPD and the severity of airflow limitation was determined by GOLD gradation criteria [10]

Those had duration of COPD for more than 5 years with stable course of disease, having a regular follow up for 1 year with no hospitalization for COPD related illness in preceding 6 months were included in study group. All COPD patients in study were males and had smoking history. They were having moderate to severe airflow limitation.

The evaluation was done in following stages -

1) A written informed consent was taken from all participants of this study.
2) A detailed history-taking and thorough clinical examination was done.
3) Spirometry test was performed in both groups and diagnosis of COPD was confirmed in cases.
4) VEP recording was done.

The study and control group were selected as per inclusion and exclusion criteria. Visual acuity was tested by using Snellen's chart for distant vision. Colour vision test was done using Ishihara's chart. Those having normal vision (6/6 with or without correction) and normal colour vision were included in study. Spirometry test was done in study group with the help of ***MEDGRAPHICS Body Plethysmograph*** machine.

Inclusion criteria

1. Males with age group of 40-60 years.
2. Clinically stable COPD patients with duration of illness more than 5 years.

3. On Spirometry test, patients having post-Bronchodilator FEV_1% predicted value less than 80% with FEV_1/FVC ratio < 0.70.

Exclusion criteria

1. Patients of COPD in acute exacerbation.
2. Subjects having any clinical neuropathy.
3. Subjects having visual impairment like cataract, colour vision defect, optic neuritis, glaucoma, optic disc and retinal pathologies.
4. Subjects suffering from another acute/chronic medical disorder like hypertension, diabetes mellitus, malignancy, leprosy, tuberculosis.
5. Subjects with history of addiction to alcohol, drug abuse.
6. Subjects with history of drug intake known to cause central neuropathy e.g. Reserpine, Phenytoin, Alphamethyldopa, Nitrofurantoin.

Pre-test preparation –

Test was carried out with prior appointment to patients. Patient was instructed to clean scalp with shampoo and not to apply oil, also instructed to avoid any miotic or mydriatic drugs 12 hours before the test. The usual glasses if any should be put on during the test. The skin was prepared by mild abrading and degreasing by *Nu-Prep* gel. The electrodes were placed on their respective sites using electrode paste as per 10-20 international system of electrode placement. ***EMG and EP digital neurophysiological system software, Neuro-MEPw*** version 3.0, 64.0 was used to conduct evoked potential tests.

Pattern reversal visual evoked potential recording –

Subjects having usual glasses were instructed to wear their spectacles at the time of examination. Subject was seated at one meter (100 cm) distance in front of the television screen. Monocular stimulation was performed and the eye that was not being tested was covered. Subject was instructed to fix gaze and concentrate on a small red

rectangle present at the centre of screen with one eye. Checks were made to reverse at rate of 1 Hz and an average of 100 responses was recorded in 400 milliseconds from each eye separately.

Electrode placement:

Active electrode (O_z) – mid-occipital i.e.5 cm above inion in midline

Reference electrode (F_z) – mid frontal i.e. 12 cm above the nasion in mid-line

Ground electrode (C_z) – at vertex.

Machine settings:

1) Filter – Low cut filters (LF) was set at 2 Hz and High cut filters (HF) at 100 Hz.

2) Impedance – The electrode impedance was kept below 5 kΩ.

3) Stimulus - Black and white checker board squares of size 8 × 8 (64'). Reversal pattern type with pattern drawing of chess was used to give stimulus. Small fixed point in red colour was used. Brightness of screen was kept high.

Parameters studied: VEP waveform was recorded and labelled for the peaks N75, P100, N145. Latency of P100, amplitude of P100 was obtained. For judging the reproducibility of the VEP pattern, two trials were recorded, averaged and superimposed.

Statistical analysis:

Unpaired (independent) t- test was used to compare VEP parameters (Latency and Amplitude) in COPD patients and controls. **p-value of 0.05 or less** has been considered as statistically significant.

RESULTS

Table no. 1: Comparison of VEP parameters of Right eye in cases and controls.

Right Eye VEP parameters	Cases (Mean ± S.D.)	Controls (Mean± S.D.)	p value	

P100 Latency (ms)	106.66 ± 6.47	99.48 ± 2.68	< 0.0001	s
P100 Amplitude (µV)	6.36 ± 1.29	6.87 ± 1.54	0.0801	ns

Table no. 2: Comparison of VEP parameters of Left eye in Case and Control group.

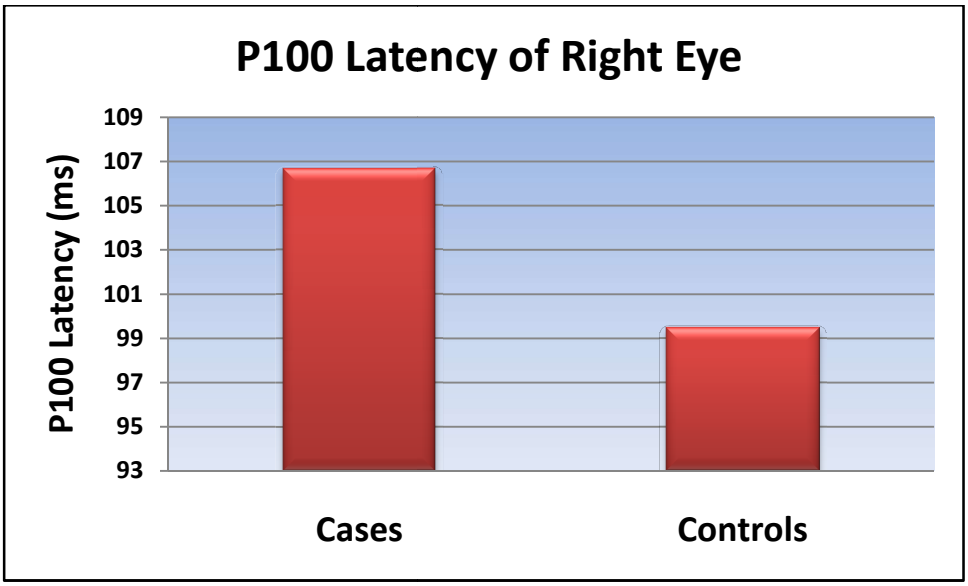
Left Eye VEP parameters	Cases (Mean ± S.D.)	Controls (Mean± S.D.)	p value	
P100 Latency (ms)	105.27 ± 6.68	97.8 ± 3.43	< 0.0001	s
P100 Amplitude (µV)	6.42 ± 1.34	6.94 ± 1.58	0.081	ns

p value ≤ 0.05 = Statistically significant

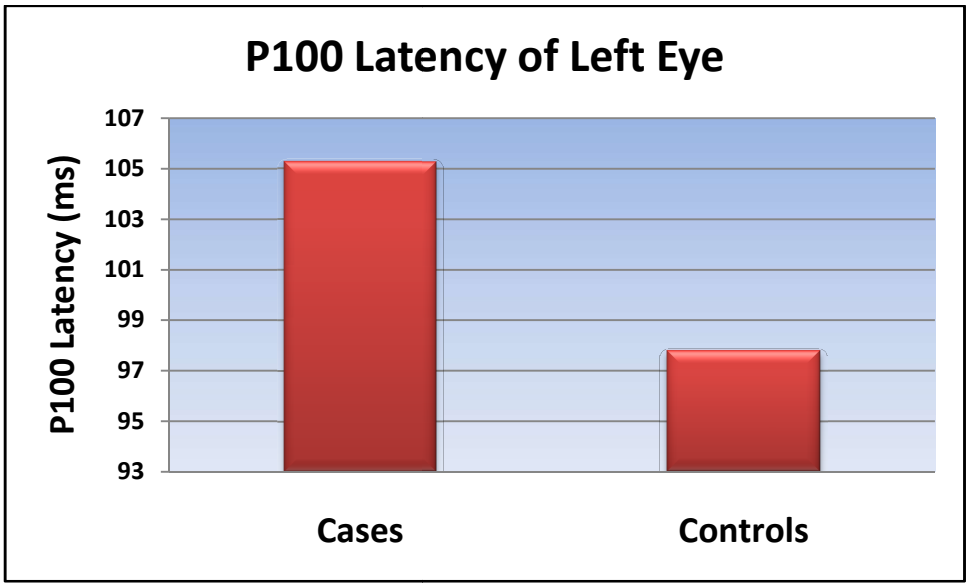
p value > 0.05 = Statistically non-significant

There was significant statistical increased P100 Latency of Right & Left eye in case group compared to control group (p value < 0.05) which is shown in Bar diagram no.1 & 2. While there was decrease in P100 Amplitude of Right& Left eye in case group compared to control group but no significant statistical difference (p value > 0.05). This is shown in Bar diagram no. 3 & 4.

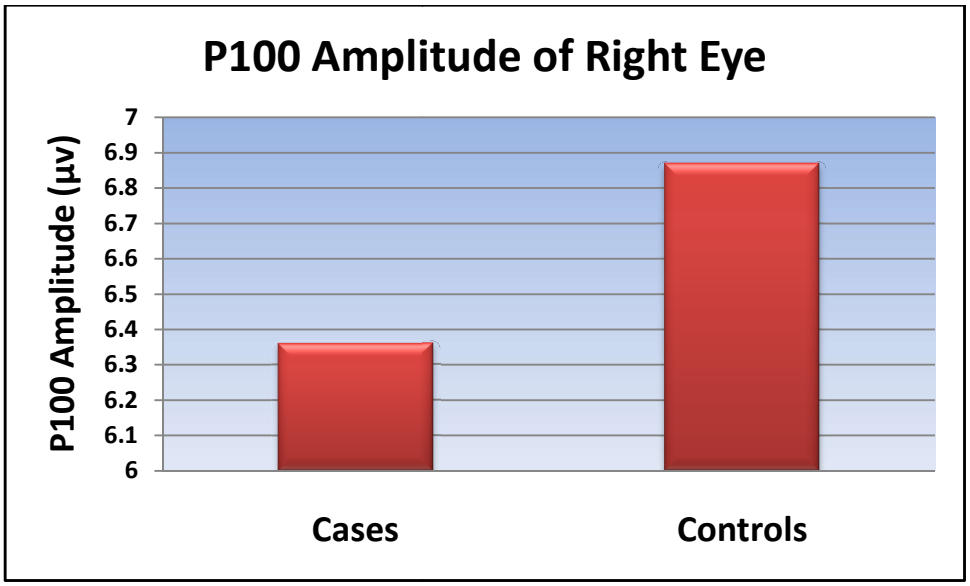
Bar diagram no. 1: Showing comparison of P100 Latency (ms) of Right Eye in case group and control group.



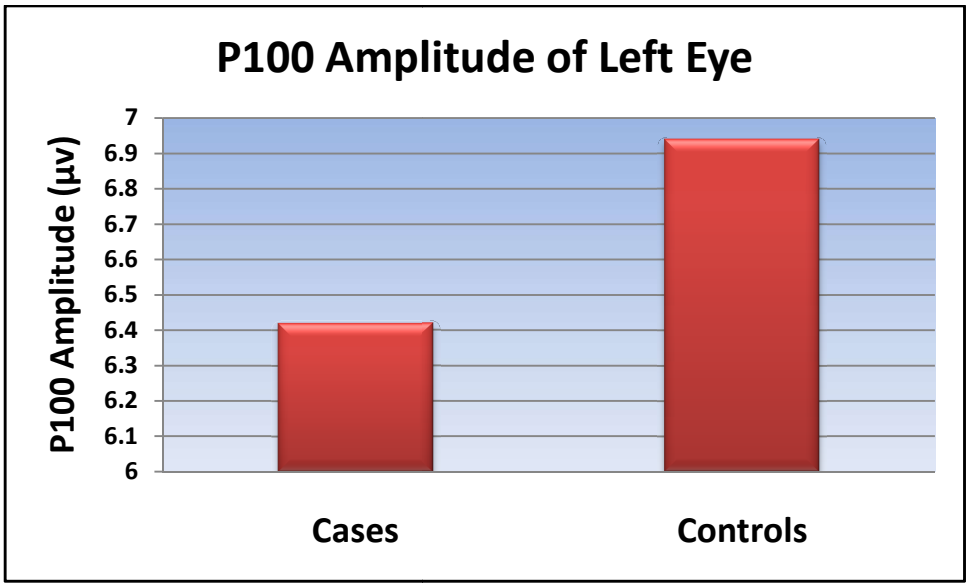
Bar diagram no.2 : Shows the comparison of P100 Latency (ms) of Left Eye in case group and control group.



Bar diagram no. 3: Comparison of P100 Amplitude (μv) of Right Eye is shown in study group.



Bar diagram no. 4: Showing comparison of P100 Amplitude (µv) of Left Eye in study group.



DISCUSSION

There was prolonged latency of P100 wave in both eyes among COPD patients which is statistically significant (p value <0.05) compared to controls. This finding is in accordance with the findings of studies by *Barbieri et al [11](1996), Ozge et al [12] (2005), Sezer M et al [13] (2007), Hafez et al [14] (2009), Gupta et al [15] (2010), Demir et al [16] (2012).*

While there was no significant statistical difference in P100 amplitude of right eye and left eye in case group compared to control group. Similar findings are observed in studies by *Sezer M [13] (2007), Demir HD [16] (2012)*.

Barbieri et al[11] (1996) studied the auditory and visual evoked potential in patients with mild or moderate chronic respiratory insufficiency and found significantly prolonged P100 latency in patients. Thus, concluded that there was subclinical involvement of central nervous system in mild or moderate respiratory insufficiency.

Ozge et al[12] (2005), on assessment of VEP in severe COPD patients found abnormalities in 82.1% patients compared to healthy controls. Few of their COPD patients had subjective visual complaints, including decreased visual acuity, decreased colour vision, and attacks of short durations of vision loss. They concluded that optic nerve is often involved in patients with severe COPD, possibly as a part of polyneuropathy and this is related to acidosis, hypercarbia, and airway obstruction, but independent of disease duration, smoking, and age of patient.

Sezer M et al[13] (2007) found difference in latency of P100 wave (increased latency) in COPD patients. They concluded that increased latency was due to hypoxemia caused by ventilation-perfusion imbalance in COPD. Thus, as the visual pathways of COPD patients were affected due to chronic hypoxemia; the visual quality of these patients was found to be lower than control subjects.

Kayacan et al[17] (2001) found that VEP latencies of study subjects were not different from that of control group although their COPD patients had high incidence of polyneuropathy and BAEP abnormalities. The possible reason for this may be that they performed flash VEP recording while present study was conducted with pattern reversal VEP. Pattern reversal is the preferred technique for most clinical purposes because of it is reproducible and its inter-subject variability of major waves is smaller.

In present study, the COPD patients were smokers and had moderate to severe airflow obstruction (stage 2,3). Optic nerve is often involved in patients with severe COPD, possibly as a part of polyneuropathy and this is related to acidosis, hypercarbia, and airway obstruction. The contents of tobacco smoke in addition to hypoxemia lead to hypoxia.The subclinical VEP impairment in patients of COPD was due to the severity of airflow obstruction which causes chronic hypoxemia. The progressive chronic hypoxemia leads to development of tissue hypoxia and decreases the cerebral perfusion; also it slows the nerve conduction in visual pathways which causes prolongation of latency. Thus all these factors related to COPD; affect functioning of visual pathway and causes VEP impairment.

CONCLUSION

The prolongation of latencies of Visual evoked potentials in patients of COPD is due to slowing of conduction in visual pathway which is suggestive of demyelination. The chronic airway obstruction causes hypoxemia and leads to hypoxia which decreases the cerebral perfusion. There was subclinical visual impairment in patients of COPD which is related to smoking index and severity of airflow obstruction. Thus there is a need of evaluating this and other associated co-morbidities of COPD in addition to pulmonary manifestations in management and rehabilitation of COPD patients. It will help in improvement of quality of life of COPD patients.

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3

Original article

A STUDY OF PREVALENCE OF MAJOR DEPRESSIVE DISORDER IN PATIENTS PRIMARILY HAVE HEADACHE AS A SYMPTOM

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Abstract

Background

Given the stigma regarding psychiatric illnesses in our country, it is common for patients to visit the O.P.D. with the primary generalized complain which requires a medical personnel to create a rapport and unmask the underlying stressor. Based on surveys like these, training modules can be developed for General practitioners and Community Level Health care workers to create awareness and unmask underlying stressor. **Aims and Objectives** 1 To establish the prevalence of M.D.D. in patients reporting headache as their primary symptom 2To establish co-existence of M.D.D. with Headache disorders 3To quantify the severity of M.D.D. (if present) **Materials and Methodology** Patients coming to O.P.D. of a Private multi-speciality hospital, having full time psychiatry facilities, primarily for treatment of Headache were studied. The patients were first exposed to International Classification of Headache, Then Mini Psychiatric Scale and then if the patients came positive for MDD then they were exposed to HDRS. **Result and Discussion** The main findings of our study are: Maximum proportion of patients presenting to a General Hospital O.P.D. with the primary complain of Headache cannot be classified into a particular type of Headache as per I.C.H. Prevalence of Headache is more common in Females as compared to Males. Prevalence of Major Depressive Disorder is also more common in Females as compared to Males. The prevalence of Moderate type of Major Depressive Disorder is the most common amongst the various grades of M.D.D. this is consistent in both the sexes. The co-existence of M.D.D. was most rampant with Tension Type Headache and Least common with Cluster type Headache. **Conclusion** The study shows how frequently and rampantly Headache and Major Depressive Disorder co-exist and it highlights the need to train the staff and doctors at the Primary and Community Health-care level to explore and create a rapport with the patients visiting the O.P.D. to get to the root of their

problems and make sure that the stigma associated with Psychiatric illnesses doesn't lead to people not opening up to the physician, directly increasing the burden of Psychiatric morbidities on the country.

Keywords: Headache, Depression, Stigma

Introduction:

Headache–Headache is the third most common cause of disability worldwide.[1] Headache is one of the most common presentations in an Out Patient Department in any General hospital. Given the stigma that exists in many countries like India[2]as far as Psychiatric diseases are concerned, it has been routinely observed that the patients are usually very guarded about opening up emotionally to the Physician.

Depression- Depression is one of the most common mental disorders and 0.3 Billion people suffer from Depression worldwide i.e. almost 4% of the entire world's population suffers clinical depression. Depression is the leading cause of Disability worldwide and has increased the overall burden on the respective economies worldwide. [3]

Even though many studies have established co-existence of Primary Headache associated with Depression and Anxiety Disorders, there is a dire need of scientific studies aimed at unmasking the alternate or somatic presentations of Depression, the most common of which is Headache [4, 5, 6]

Aims and Objectives:

1. To establish the prevalence of M.D.D. in patients reporting headache as their primary symptom

2. To establish co-existence of M.D.D. with Headache disorders

3. To quantify the severity of M.D.D. (if present)

Materials and Methodology:

Study Site :

- Private multi-specialty hospital, having full time psychiatry facilities.

Subjects:

- Patients coming to O.P.D. primarily for treatment of Headache.

Inclusion Criterion:

1. Patients coming to O.P.D. primarily for treatment of Headache.
2. Voluntarily agreeing to participation in study after full disclosure.

Exclusion Criterion:

1. Patients already diagnosed with a psychiatric illness.
2. Patients below the age of 18 years.
3. Non Co-operative patients.

Time-Frame:

- 2 years time 16th January 2014 to 31st December 2016.

Instruments:

1. International Classification of Headache Disorders developed by Headache Classification Committee of International Headache Society.[7]
2. Diagnostic and Statistical Manual 5th Edition Criterions for Depression. The **Diagnostic and Statistical Manual of Mental Disorders** (**DSM**), devised by the American Psychiatric Association (APA) is used, or

relied upon by Psychiatrists worldwide and is considered as a standard diagnostic tool for Psychiatric disorders in India. The DSM is now in its fifth edition, DSM-5, published on May 18, 2013. [8]

3. Hamilton Rating scale of Depression [9,10,11] – The HDRS (also known as the Ham-D) is the most widely used clinician-administered depression assessment scale. The original version contains 17 items (HDRS17) pertaining to symptoms of depression experienced over the past week. Although the scale was designed for completion after an unstructured clinical interview, there are now semi-structured interview guides available. The HDRS was originally developed for hospital inpatients, thus the emphasis on melancholic and physical symptoms of depression. For the HDRS17, a score of 0–7 is generally accepted to be within the normal range (or in clinical remission), while a score of 20 or higher (indicating at least moderate severity) is usually required for entry into a clinical trial. The severity ranges for the HAMD: no depression (0–7); mild depression (8–16); moderate depression (17–23); and severe depression (≥24).

Results and Analysis:

Table 1 Demographic Details of the study population

Demographic characteristics	Sub categories	Males	Females	Percentage Distribution in study (%)
Sex		78	82	100
Age	18 to 25 years	25	25	31.25

	26 to 50 years	30	40	43.75
	51 TO 65 years	23	17	25
Occupation	Unemployed	13	52	40.625
	Employed	65	30	59.375
Education	Illiterate	28	36	40
	Literate	50	46	60

Table 1 shows the demographic distribution of the patients analyzed in this study. The study population was divided based on various demographic variables i.e. Gender, Age, Occupation and Education. Of the population studied of 160 subjects, 78 were males (48.75%) and 82 were females (51.25%). Of the 160 subjects studied, 31.25% belonged to the age group of 18 to 25 years, 43.75% belonged to the age group of 26 to 50 years and 25% belong to the age group of 51 to 65 years. 40.625% patients studied were unemployed whereas 59.375% were employed. 60% of the patients were Literate and 40% were illiterate.

Table 2- Classification according to type of headache

Type of headache	**Male**	**Female**	**Total**
Tension Type Headache	6	12	18
Cluster Headache	4	3	7
Migraine without Aura	12	15	27
Migraine with Aura	3	4	7
Non Fulfilling any criterion	53	48	101
Total	78	82	160

Table 2 shows the classification of the study population based on the type of headache. Using the International Classification of Headache as an instrument, the population with Tension Type Headache was 11.25%, the population with cluster headache was 4.375%, the patients diagnosed to have Migraine with aura were 4.375% and Migraine without Aura were 16.875%, whereas 63.125% patients did not meet the criterions for any particular classification for Headache.

Table 3 Classification based on Major Depressive Disorder

MDD	**MALE**	**FEMALE**	**TOTAL**
YES	42	58	100
NO	36	24	60

TOTAL	78	82	160

In table 3, patients are classified based on their sex and presence or absence of Major Depressive Disorder as per DSM-5 criterions. 42 Males i.e. 53.85% males were found to be positive for Major Depressive Disorder, whereas 70.73% females were found positive for Major Depressive Disorder. Of the total patients found positive for M.D.D. 42% were Males and 58% were Females.

Table 4 Classification based on Severity of Depression

HAM D scores	**Severity of Depression**	**MALE**	**FEMALE**	**No of patients**
8 to 13	Mild	7	14	21
14 to 18	Moderate	25	30	55
19 to 22	Severe	8	12	20
≥ 23	Very severe	2	2	4
Total	-	42	58	100

Table 4 shows Classification of the study population with Major Depressive Disorder based on the severity as per HAM-D scale. 21% patients had Mild Depression, 55% had Moderate Depression, and 20% had Severe while 4% had Very Severe Depression.

Table 5 Classification of Study Population based on Types of Headache

Type of headache	**HAM – D ≥ 7**	**MALE**	**FEMALE**	**Total**
Migraine with aura	2	1	1	(3/4)7
Migraine without aura	16	6	10	(12/15)27
Tension type headache	15	5	10	(6/12)18
Cluster headache	1	0	1	(3/4) 7

Total	34	12	22	

Table 5- Shows Classification of Study Population based on Types of Headache, prevalence of Major Depressive Disorder and Sex. Of the Total 100 patients found positive for Major Depressive Disorder from the 160 patients studied, 34 patients also had a classifiable type of headache as per International Classification of Headache. Of these 34 patients, 5.88% had Migraine with Aura (2.44% Males and 2.44% Females), 47% had Migraine without Aura (17.625% Males and 29.375% Females), 44.12% had Tension Type Headache (14.7% Males and 29.42% Females), 2.94% had Cluster Headache (Female).

53% Patients with Migraine type Headache had co-existing Major Depressive Disorder, whereas 83.33% of patients with Tension Type Headache had Co-existing Major Depressive Disorder.

Discussion:

- The main findings of our study are: Maximum proportion of patients presenting to a General Hospital O.P.D. with the primary complain of Headache cannot be classified into a particular type of Headache as per I.C.H. Prevalence of Headache is more common in Females as compared to Males. Prevalence of Major Depressive Disorder is also more common in Females as compared to Males. The prevalence of Moderate type of Major Depressive Disorder is the most common amongst the various grades of M.D.D. this is consistent in both the sexes. The co-existence of M.D.D. was most rampant with Tension Type Headache and least common with Cluster type Headache.

- While comparing our study with the Epidemiology of migraine and other types of headache in Asia report [(12)] we found that the prevalence of Tension Type headache was more than Migraine type in that particular report while it was vice versa in our study. Both the studies were similar in finding the prevalence of Migraine without Aura to be more than Migraine with Aura.

- While comparing with Migraine, psychiatric disorders and suicide attempts: An epidemiological study in young adults[(13)] we found that in both the studies the prevalence of Migraine was more common in females. While in our study the incidence of M.D.D. with Migraine without Aura was more than the incidence of M.D.D. with Migraine with Aura, it was vice-versa in the above mentioned study

- While comparing our study with, Chronic Pain and Depression: Does the Evidence Support a Relationship?[14] we found both the studies in sync in the observation that M.D.D. is more prevalent in patients with a classifiable type of headache than in patients without a particular type of headache.

Conclusion:

- The study shows how frequently and rampantly Headache and Major Depressive Disorder co-exist and it highlights the need to train the staff and doctors at the Primary and Community Health-care level to explore and create a rapport with the patients visiting the O.P.D. to get to the root of their problems and make sure that the stigma associated with Psychiatric illnesses doesn't lead to people not opening up to the physician, directly increasing the burden of Psychiatric morbidities on the country.

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4

ORIGINAL ARTICLE

HISTOPATHOLOGICAL SPECTRUM OF POLYPOIDAL LESIONS OF NASAL & PARA-NASAL SINUSES

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ABSTRACT:

INTRODUCTION: Polypoidal lesions of nasal and para-nasal sinuses are commonly seen in clinical practice and have a wide array of histopathological subtypes. Aim of this study was to observe the occurrence and distribution of these subtypes. **METHODOLOGY:** An observational study over 3 years (2014 – 2017) was carried out at a tertiary care centre. The details of all the histo-pathological specimens of polypoidal lesions from nasal & para-nasal

sinuses were processed and subtyped as per defined protocol. The observations were analysed, classified and compared with other studies using appropriate statistical tests. **RESULTS:** Out of total 96 specimens, majority of the lesions (n=47, 48.96%) belonged to young age group (21 to 40 years). Non-neoplastic lesions comprised of 82 cases (85.41%) with inflammatory polyp being the most common subtype (n=66, 68.80%). Neoplastic lesions showed Inverted Papilloma (n=4.16%), Angiofibroma (n=3.12%) and Hemangioma (n=3.12%) as commonest lesions. Malignant subtypes were seen in 2 cases. **CONCLUSION:** Non-neoplastic lesions were the most common variety of nasal / para-nasal polypoidal masses, with inflammatory polyp being the most common subtype. Histological analysis helps in prognosis and management of such polypoidal lesions.

KEYWORDS:

Polypoidal lesions, Nasal and Para-nasal Sinuses, Histopathology

INTRODUCTION:

The nasal cavity, para-nasal sinuses and nasopharynx form a functional unity that is reflected in the communality of the pathologic processes that involve the region. This is particularly the case for the first two components, which are often grouped under the term sinonasal. The two main types of epithelia lining these structures are stratified squamous and respiratory type pseudo-stratified columnar[1]. A wide array of neoplastic and non-neoplastic conditions present as a mass lesion[2]. Nasal polyps are polypoidal masses arising from mucus membranes of nose and para-nasal sinuses and are one of the most commonly encountered lesions in clinical practice[3]. The formation of nasal polyps is associated with recurrent attacks of rhinitis. They are focal protrusions of the mucosa which may reach 3-4 centimetres in length[4]. They are often bilateral and multiple, which lead to visible broadening of nose. These lesions affect males predominantly in 3:1 ratio[1]. Histopathological analysis helps to distinguish the nature of these lesions and thereby its management and prognostication.

MATERIAL AND METHODS:

An observational study was carried out at the department of Pathology in a tertiary care centre of Western India, with an aim to study the classification of nasal and para-nasal sinus polypoidal lesions in terms of its histopathology and demographic distribution.

Details of all the histopathological specimens from nasal and para-nasal sinuses were collected from the duration of June 2014 to May 2017 (36 months). Formalin fixed tissues were processed and embedded with paraffin as per standard protocol. This section of 3-4 micrometres were stained with haematoxylin & eosin (H&E) stain. Special stains were used whenever necessary. Various parameters related to histopathological analysis of the specimens were noted. The data was statistically analysed using standard descriptive statistical measures.

OBSERVATIONS AND RESULTS:

During the study period of 36 months, a total of 96 biopsy specimens from nasal and para-nasal sinus were analysed.

Age:

Mean age of presentation was 33.05 years ± 15.65 years and median was 31.5 years. The most common age group was between 21 to 40 years (n=47, 48.96%), thereby indicating common prevalence in young age group. Malignant lesions (n=2) were seen between the age group of 55 to 65 years.

Gender:

Male preponderance was observed in the ratio of 1.34 (55 males v/s 41 females). Non-neoplastic lesions (n=82) had 47 males and 35 females (Ratio 1.34), while neoplastic lesions (n=14) had 8 males and 6 females (Ratio 1.33).

Neoplastic v/s Non-neoplastic lesions:

Significant proportion of patients had non-neoplastic polypoidal lesions (n=82, 85.41%). Neoplastic lesions were observed in 14 (14.59%) patients (12 benign origin, 2 malignant origin). Male predominance was seen in both the groups. Malignant lesions were found in patients above 50 years age.

TABLE I: Classification & Demographics of Nasal Polypoidal Lesions

	NUMBER (%)	**MALE**	**FEMALE**	**MEDIAN AGE (years)**
NON NEOPLASTIC				
Allergic	4 (4.16%)	3	1	44
Non Allergic				
Inflammatory (Non-specific)	66 (68.80%)	38	28	30
Fungal	7 (7.29%)	3	4	42
Granulomatous lesion	3 (3.12%)	1	2	24
Rhinoscleroma	1 (1.04%)	1	0	19
Lepromatous Leprosy	1 (1.04%)	1	0	37
NEOPLASTIC BENIGN				
Inverted Papilloma	4 (4.16%)	3	1	34
Angiofibroma	3 (3.12%)	3	0	39

Hemangioma	3 (3.12%)	0	3	16
Neurofibroma	1 (1.04%)	1	0	38
Trichoepithelioma	1 (1.04%)	1	0	6
NEOPLASTIC MALIGNANT				
Undifferentiated Naso-pharyngeal Carcinoma	1 (1.04%)	0	1	55
Sinonasal Non keratinized Squamous Cell Ca	1 (1.04%)	0	1	65
TOTAL	96 (100%)	55	41	31.5

Subtypes of Polypoidal Lesions:

Non-specific inflammatory polyps were overall the most common subtype of polyp, seen in 68.8% (n=66) of patients. Infective fungal polyps were present in 7.29% (n=7) cases while allergic polyps formed 4.16% (n=4) of the patient group. Amongst the neoplastic group, the most common pathology seen was Inverted Papilloma (n=4, 4.16%), followed by Angiofibroma and Hemangioma, with 3 cases (3.12%) each. Malignant lesions were seen in 2 cases, one with Nasopharyngeal Carcinoma (female, 55 years) and one with Non-keratinized Squamous Cell Carcinoma (female, 65 years). Details and classification of all the subtypes observed has been described in Table I.

DISCUSSION:

Polypoidal masses in the nasal cavity form a wide variety of lesions with different histopathological features. The nasal polypoidal lesions arise as mass like projections from the nasal and para-nasal sinus mucosa, leading to clinical symptoms such as nasal fullness, anosmia, nasal discharge, etc. Clinical differentiation between the subtypes of nasal masses is difficult. Hence, it is the histological analysis that helps to distinguish the subtypes, especially between the non-neoplastic and neoplastic variants.

In our study, out of the total 96 cases collected over 3 years, younger age and male gender predominance was observed. Comparative analysis with other similar studies is mentioned in Table II. The most common age group of presentation in current study was 21 to 40 years, comparable to other studies. Male dominance has uniformly been observed amongst all the previous hospital and population based studies, although with variable male to female ratio.

Looking into the primary categorization of nasal masses, non-neoplastic lesions are the most commonly observed category. Similar observations were made in this study as well as in the previous studies by Bijjaragi et al[3], Zafar et al[5] and others. However, the study by Dasgupta et al[6] noted nearly equal number of non-neoplastic and neoplastic cases, which was quite contrary to the observations from other studies.

Table II: Comparison of present study with similar studies

	Dasgupta et al[6]	**Maru et al[7]**	**Kalpana et al[8]**	**Zafar et al[5]**	**Bijjaragi et al[3]**	**Kulkarni et al[9]**	**Present Study**
No. of cases	345	70	100	240	132	117	96
M:F Ratio	2.1	3.1	2.4	1.7	1.6	2.16	1.34
Inflammatory Polyps (%)	62.8%	48%	35%	49.58%	55.3%	69.3%	68.8%
Non-neoplastic lesions (%)	50.7%	71.43%	66%	60%	76%	86%	85.41%
Neoplastic lesions (%)	49.3%	28.57%	34%	40%	24%	14%	14.59%

Nonspecific inflammatory and allergic polyps are the most common subtypes amongst the non-neoplastic group. Histologically, inflammatory polyps are characterized by oedematous mucosa with loose stroma, often harbouring hyperplastic or cystic mucous glands, infiltrated with cells such as neutrophils, eosinophils, plasma cells & occasional lymphocyte clusters. The allergic variety of polyps also have similar histology, except for significant dominance of eosinophils. In our study, inflammatory polyps were seen in 68.8%, while allergic polyps were seen in 4.16% cases. As seen in Table II, this observation was comparable to those in other studies as well.

Fungal infections leading to mass like lesions in nasal and paranasal areas are also commonly seen. In our study, fungal elements were detected using PAS as a special stain. However, we did not do further categorization

of fungal species. Cumulative cases of fungal pathology comprised of 7 cases (7.29%), while Zafar et al reported them as 3.45% in his study[5]. Rhinosporidiosis (caused by Rhinosporidium seeberi) and Mucormycosis are believed to be the common fungal pathogens leading to nasal masses. Similarly, Rhinoscleroma is also a common non-neoplastic lesion which is characterized by presence of signature cells called Mikulicz Cells (foamy histiocytes) and plasma cells[1]. We observed one such case in a 19-year-old male patient. Our incidence was lower than those seen in studies by Zafar et al[5], Bijjaragi et al[3], Dafale et al[10] and Kuruba et al[2]. Amongst other non-neoplastic lesions, we had 3 cases of non-specific granulomatous changes (non-tuberculous in origin) and one case of lepromatous leprosy.

The most common neoplastic lesion we observed was inverted papilloma, seen in 4 patients (4.19%). Inverted papilloma is a benign neoplastic lesion characterized by local invasion into the mucosa (endophytic growth) with higher rates of recurrence and nearly 10% chances of malignant conversion. Other studies by Bijjaragi et al[3], Kuruba et al[2] and Dafale et al[10] have reported inverted papilloma in the range of 3-4%. Hemangiomatous masses are another common variety of neoplastic lesions. They were seen in 3.12% of our cases, 10.6% by Bijjaragi et al[3] and 5.2% by Kuruba et al[2]. Angiofibroma were seen in 3.12% of cases, almost near to 2.85% cases by Dafale et al[10] and 3.31% cases seen in another study[11]. Neurofibroma (male, 38 years) & Trichoepithelioma (male, 6 years) were the uncommon variety of benign lesions, similar to those seen in study by Bijjaragi et al[3] and Shaila et al[12].

Overall, malignant lesions have been seen commonly in elderly age group, above the age of 50 years. The malignancies of sinonasal tract account for roughly 3-5% of all head and neck cancers, squamous cell carcinoma being the most common histological type[2,13]. In the present study, two cases of malignant nasal masses were observed, namely undifferentiated nasopharyngeal carcinoma (female, 55 years) and sinonasal non-keratinized squamous cell carcinoma (female, 65 years). Dafale et al[10]& Kulkarni et al[9] also reported 2 cases of squamous cell carcinoma in their studies of 70 & 117 patients respectively. Likewise, Maru et al[7] had 2 cases of nasopharyngeal carcinoma in his study of 70 patients, both being in sixth decade of life. However, two cases of malignant pathology in our study are not statistically significant to draw definitive conclusions and further studies or meta-analysis with larger sample size are warranted.

CONCLUSION:

Our study corroborated with the fact that non-neoplastic inflammatory polyps constitute the most common subtype of nasal and paranasal sinus polypoidal lesions. Although uncommon, polypoidal lesions also consist of various benign and malignant pathologies, which are difficult to distinguish on clinical grounds alone. Hence, histopathological analysis indeed plays a crucial role in subtyping such lesions and thereby helps in appropriate management and prognosis of the patient.

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5

TEACHING VISUAL ACUITY ASSESSMENT TO MEDICAL UNDERGRADUATES

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ABSTRACT

INTRODUCTION Visual acuity assessment is a simple but extremely important examination in ophthalmology. This aids examination and diagnosis of common eye diseases. This is done using standardized Snellen's chart[1].

OBJECTIVE To teach visual acuity assessment to undergraduates by various Teaching-learning methods,Obtaining perception of faculties and students for these.,To identify the method most preferred by most of the undergraduates. **METHODOLOGY**A prospective experimental study. Sample size = 100After IRB approval, the study was carried out during the ophthalmic term of third MBBS students. Four teaching methods were power point presentation, role play, video clip show and clinical demonstration. Evaluation was done by pre-post test in form of standardized validated MCQs (cognitive domain) and DOPS (directly observed practical skill) with checklist (for psychomotor and affective domain). **RESULTS** Statistically significant improvement in learning of students observed from pre-post test. Mean value of marks improved from 5.64 to 8.94 and SD value 1.307 to 1.052 with p

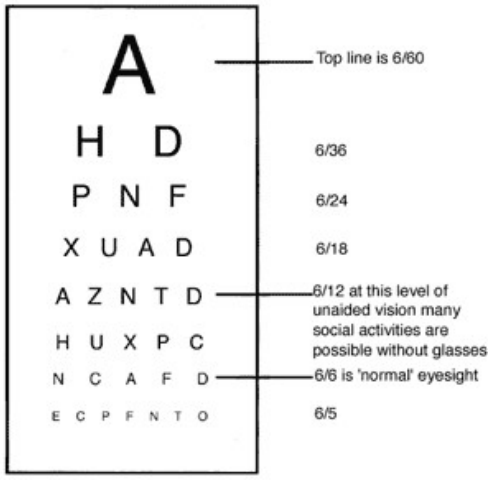
value 0.0001 .Student's feedback was suggestive of increase in confidence in skill with preferred method being clinical demonstration. Faculty feedback was positive with suggestion for such modules for other topics as well. **CONCLUSION** Learning improved with multiple teaching-learning methods. More than 95% faculty and students agree with the teaching-learning methods. **LIMITATION** Long term results could not be evaluated.

Key words: visual acuity assessment, undergraduate students, multiple teaching learning methods.

Introduction:

Visual acuity assessment is a simple but extremely important examination in ophthalmology. It is an easy procedure, but if the students are not taught in both clinical posting and tutorials, they are not competent in assessing vision accurately. This leads to lack of confidence when these students are posted in eye camps.

It provides a baseline recording of visual acuity. It leads to the diagnosis and judgment of severity of the common eye diseases and is the most important prognostic factor**.** This aids in examination and diagnosis of eye diseases and of refractory error[3] .It is of paramount importance for medico-legal reasons[2]. This test is used to determine the smallest letters you can read on a standardized (Snellen's) chart[1].



Knowledge of visual acuity is thus very essential part of core curriculum of ophthalmology. Mere didactic lecture doesn't give them clarity about minute details, making the requirement of multiple teaching-learning methods more relevant[4]. Under graduates should have clear concept about visual acuity and its assessment .They should be skilled to assess vision accurately. They should be able to communicate and reassure the patient regarding his vision problems and refer him/her appropriately.

India has the largest population of blind people in the world[4]. That's over 12 million people[3]. Most of them live in the poorest parts of the country with little or no access to even basic health care facilities(3).80 per cent of them (9.6 million) could have been prevented from going blind if they had received timely diagnosis and guidance[5].

REFRACTORY ERROR is the second leading cause of blindness in India (after cataract), and according to the World Health Organization, 153 million people worldwide live with visual impairment due to uncorrected refractive errors[3].It can be diagnosed if community is screened for visual acuity in eye camps. So we need to train all future health care professionals (undergraduates) for this basic skill irrespective of the fact that whether they pursue ophthalmology or not in residency.

AIMS AND OBJECTIVES

A. To educate for visual acuity assessment to all undergraduate students during their ophthalmic term.

B. Obtaining perception of faculties and students for these teaching-learning methods.

C. To identify the methods preferred by most of the undergraduates.

METHODOLOGY

The study was carried out in a tertiary eye care hospital. Out of 136 students, 100 students of sixth semester M.B.B.S. students doing one month compulsory Ophthalmology posting, enrolled for the project. These students are routinely posted to undergo training in basic ophthalmic examination and learning basic procedures including visual acuity assessment.

A prospective experimental study.

Sample size = 100

IRB approval was taken at the institute.

The study was carried out during the one month compulsory ophthalmic term of third MBBS students, after voluntary enrolment.

STUDY PERIOD: May 2015 to September 2015

The study was started with a pre test that was divided into two parts...

PART A... They were given a set of ten standardized validated MCQS (cognitive domain). These were validated by a senior faculty at our institute.

PART B... DOPS with a check list was carried out (Psychomotor and affective domain). The DOPS test was carried out with the help of faculty members.

This was followed by teaching sessions of the hundred students in groups during their posting. The sessions were spread over one week, MAINLY DIVIDED INTO FOUR SECTIONS.

1. They were first given lecture using power point; this was done for the entire batch, time duration was one hour.

2. This was followed by role play. Three students from the same batch were taken into confidence and they performed the role play in front of the whole class. Here the duration was of half an hour.

3. After role play and lecture, the students were shown the video clips of real OPD scenario. They were shown the minute details of the skill followed by discussion. This session lasted for twenty minutes. This was done in four groups of 25 students each.

4. Lastly they were shown the clinical demonstration in OPD in groups of ten. In addition to learning the clinical skill, they observed the way to communicate with the patient, and counseling the patient about common ocular problems and referring to appropriate ocular specialty.

Evaluation done in form of post test .This again comprised of same set of objective questions and DOPS WITH CHECK LIST.

Lecture using power point	One single session	One hour
Role play	One single session	Half hour
Video clip	Four batches of 25 students each	20 minutes each session
Clinical demonstration	10 batches of ten students each	20 minutes each group

OBSERVATION AND RESULT

All the students actively participated in these sessions. The pre-test and post-test were analyzed to study the significance of change in learning of students. Both t-Test and chi square test suggested that there was significant improvement in the students after the post test.

TABLE NO.1 and TABLE NO.2 shows the comparison of marks between pre and post test.

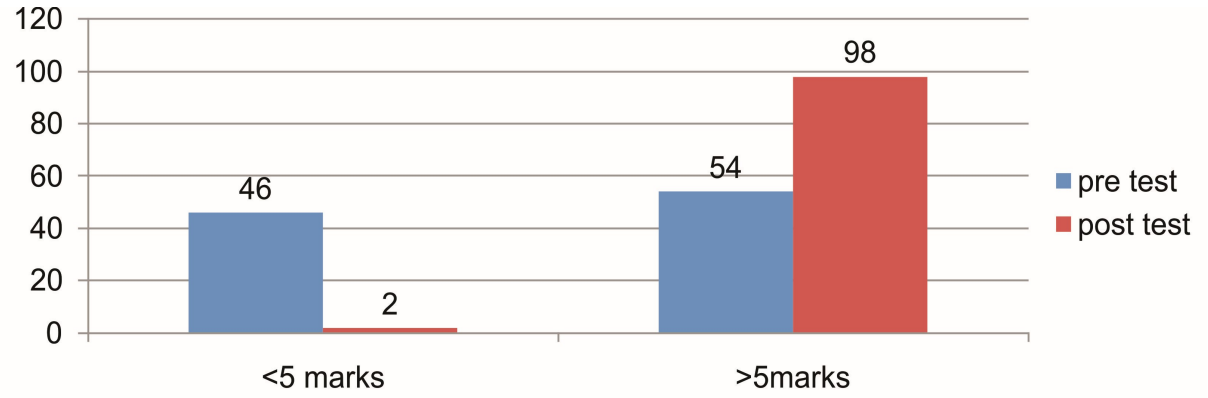
	PRE test	**POST test**
No Of Students	100	100
MEAN	5.64	8.94

	No Of Students		
TEST JANUARY	**< 5 Marks**	**> 5 Marks**	**TOTAL**
PRE	46	54	100
POST	2	98	100
TOTAL	48	152	200
Chi Square	50.685		
P	0.0001		

SD	1.307	1.052
t – test	19.669	
P	0.0001	

Table no.1

Table no.2

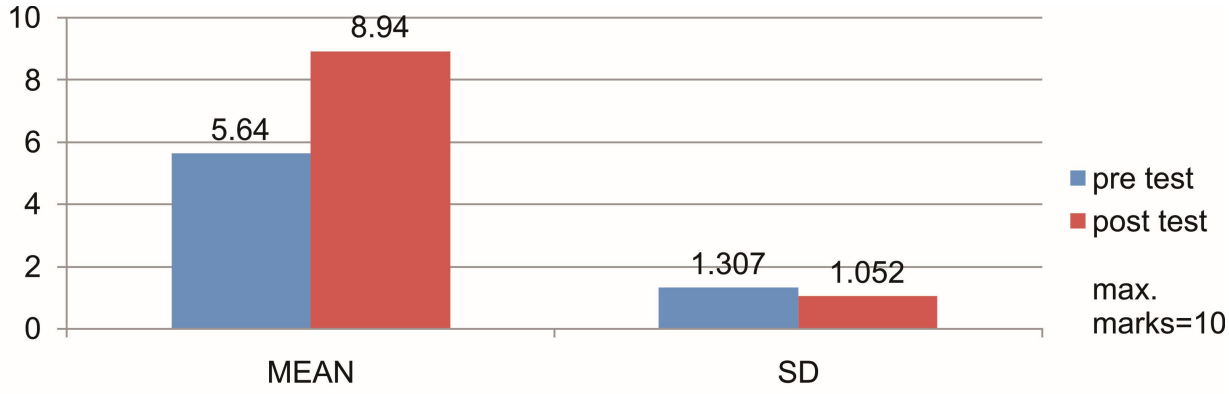


Test	No. of Students		
	<5 marks	>5 marks	TOTAL
PRE	46	54	100
POST	2	98	100
TOTAL	48	152	200
Chi square	50.685		
p	0.0001		

TABLE 3:COMPARES THE PERFORMANCE IN PRE AND POST TEST

The performance improved significantly after using multiple teaching-learning methods.

TABLE 4: SHOWS THAT THE CHANGE IN PERFORMANCE IS SIGNIFICANT

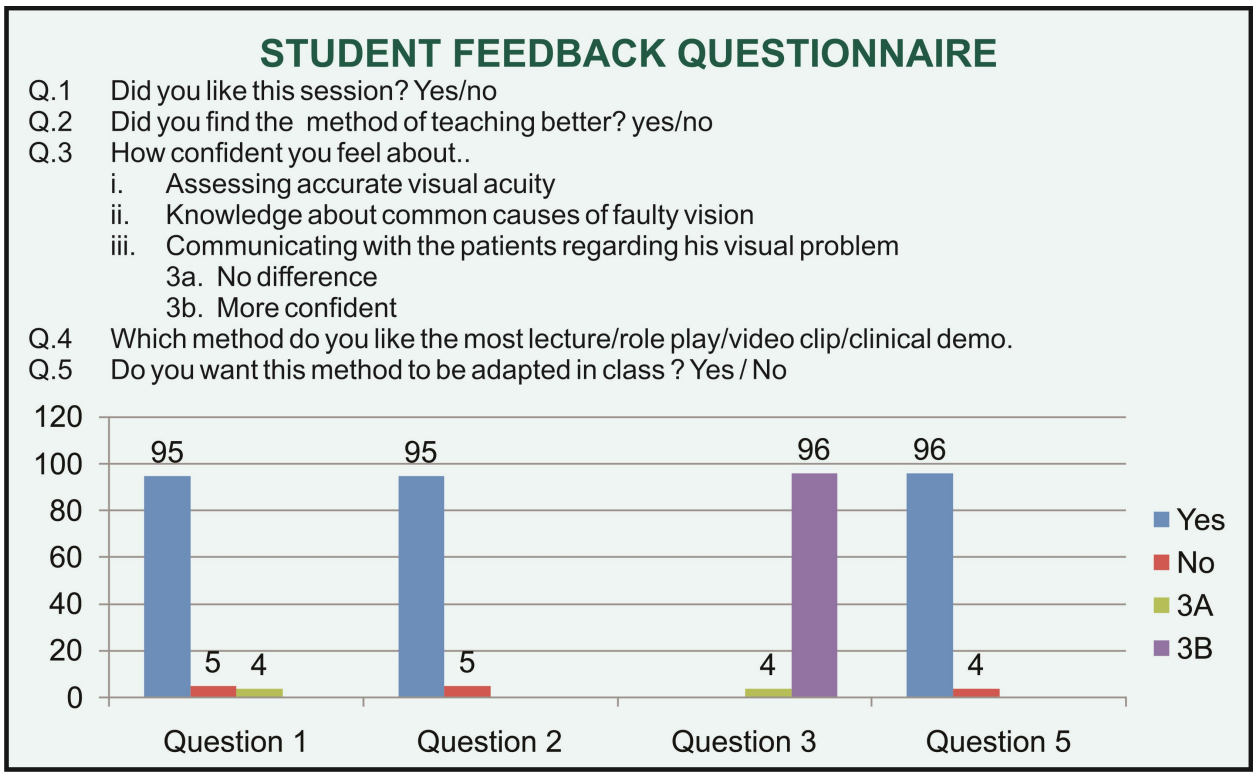


	Group A - PRE	Group B - POST
No. of students	100	100
Mean	5.64	8.94
SD	1.307	1.052
t-test	19.669	
p	0.0001 highly significant	

Here group A and group B represent the pre and post test groups and comprises the same set of 100 students. Statistically significant improvement in learning of students observed from pre-post test. Mean value of marks improved from 5.64 to 8.94 and SD value 1.307 to 1.052 with p value 0.0001. Student's feedback was suggestive of increase in confidence in skill with preferred method being clinical demonstration. Faculty feedback was positive with suggestion for such modules for other topics as well.

The students were asked to fill the feedback form.

TABLE 5: STUDENT FEEDBACK



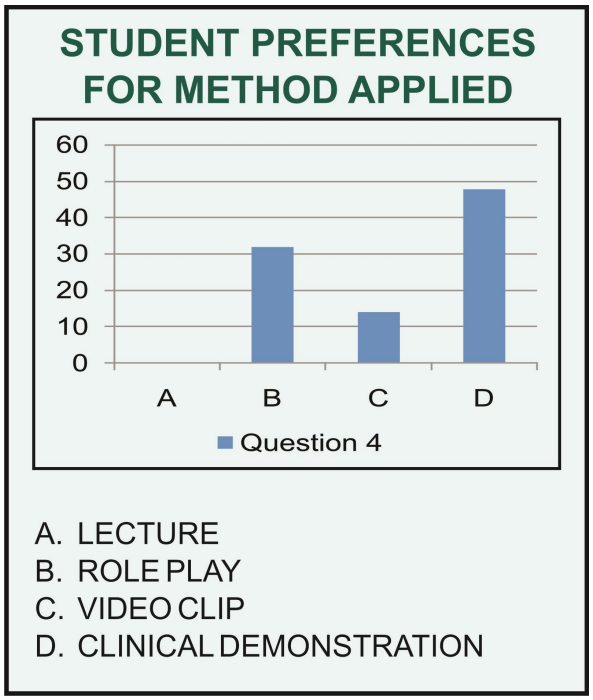
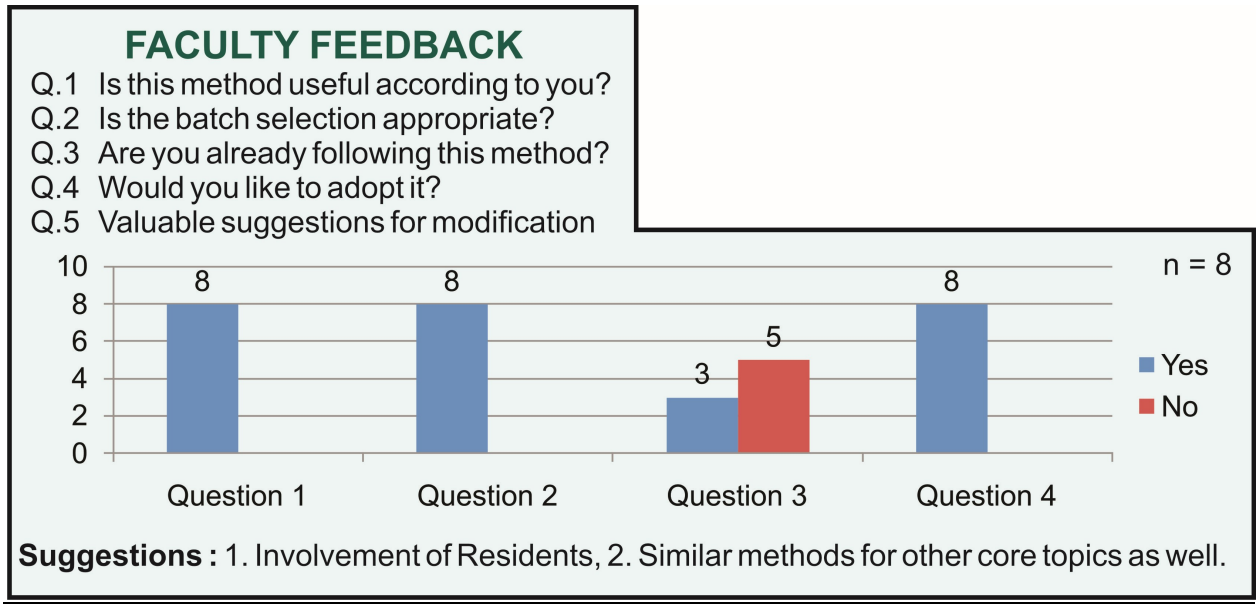


TABLE 6

TABLE 5 AND 6 shows the response of the students. The students gave a positive feedback for the module. They felt more confident about their knowledge about visual acuity. They could perform the assessment better and

were now more capable of counseling the patient for his defective vision. They found multiple teaching-learning methods a better option than sticking to anyone.

TABLE 7: The faculty feedback was taken for the module. They all found it useful and appropriate in all aspects.



The faculty felt the need of such modules for other topics of core area as well. Most of them are not using multiple methods so far. They are using lecture for tutorials and clinical demonstration. Also involvement of residents was suggested.

DISCUSSION

According to MEDICAL COUNCIL OF INDIA REGULATIONS ON GRADUATE MEDICAL EDUCATION, 1997 (AMENDED UPTO FEBRUARY 2012) there are clear guidelines about undergraduate ophthalmic course; it mentions the importance of visual acuity assessment. It says…The broad goal of the teaching of students in ophthalmology is to provide such knowledge and skills to the students that shall enable him to practice as a clinical and as a primary eye care physician and also to function effectively as a community health leader to assist in the implementation of National Programme for the prevention of blindness and rehabilitation of the visually impaired[6].

Thus, Visual acuity assessment is a very basic skill and included in core curriculum[4]. Acquiring knowledge about all the aspects of visual acuity thus becomes essential for undergraduates'. This not only helps them to understand the topic and gain the skill, but also they can guide the subjects with poor vision for further evaluation. This especially applies to interns who are posted in eye camps. They can council the patient for common causes of preventable blindness. Lastly, it is of paramount importance in medico-legal cases where first recorded vision is very crucial[2].

Improved student learning in ophthalmology with computer-aided instruction-is another study by Devitt P, PalmerE which states that didactic lectures should be used in combination with computer assisted teaching for better performance [7].

In my study, the third year undergraduate students were taught about visual acuity using various methods after a pre-test.

The performance in pre test was poor. This can be explained on the basis of lack of direct exposure with the patient. 46% students scored less than 50% marks in the pre test.

The four methods used were power point presentation, clinical demonstration, role play and video assisted teaching.

There was marked improvement in the post test. 98% students scored more than 50% marks.

Another study is "How effective is undergraduate and postgraduate teaching in ophthalmology?" by G N Shuttleworth and G W Marsh where aim was to gain an insight into the adequacy of ophthalmic medical education for doctors in the primary care setting. In the conclusion it was stated that It is apparent that most primary care doctors view their undergraduate ophthalmic medical education as inadequate and this is reflected in their confidence and understanding. It was strongly suggested that general ophthalmic education is aimed at teaching examination techniques and ophthalmological principles suitable for primary care practice [8].

Student feedback was taken for the module. There was common consensus for using multiple teaching-learning methods for core topics such as visual acuity assessment. Student feedback was also taken for the preferred method of teaching. Clinical demonstration was found to be the preferred method by most of the students.

Faculty feedback for the teaching module was taken. There was very positive feedback from faculty. They gave common consensus that they would like to adopt the similar teaching plan for other core topics in ophthalmology. The faculty also suggested that residents can be involved for such undergraduate teaching sessions.

CONCLUSION

1. 98% students scored more than 50% marks in post test.
2. Clinical demonstration is found to be most preferred method among the four methods of teaching visual acuity assessment.
3. More than 95% of students and faculty feel that we have to incorporate more than one of the above methods always **in teaching visual acuity assessment.**

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10.Teaching of ophthalmology in undergraduate curricula: a survey of Australasian and Asian medical schools Jennifer C Fan MBChB, Trevor Sherwin PhD and Charles NJ McGhee PhD FRANZCO

6

Original Article

GASTRO-PROTECTIVE DRUG UTILIZATION STUDY IN VARIOUS DEPARTMENTS OF TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Introduction: Four out of ten prescriptions in indoor-patient departments contains gastro-protective drugs. Study aimed to detect classes of gastro protective drugs prescribed with other therapies, to assess trend of co-prescription of gastro-protective with NSAIDs, Anticipated drug interactions with the prescribed gastro-protective and most commonly prescribed gastro-protective group of drug. **Materials and Methods**: It is Prospective, Observational study, approximately 133 prescription analyzed. Written informed consent was taken from the eligible patients included in the study. Drugs data collected by reviewing the prescriptions prescribed. Gastro-protective during study period. Rationality of drug use was assessed by referring to standard textbooks and guidelines. **RESULTS** Out of 200 prescriptions, 133 (66.5%) were found prescribing the gastro-protective drugs and more prescribed in the age group of 31-40 (39.84%). Gastro-protective drugs were co-prescribed with different classes of drugs of which NSAIDs (34.83%) were the most common. The Paracetamol (48.10%) were found to be the most commonly prescribed NSAIDs with gastro-protective drugs. The PPIs (66.66%) were found to be the most commonly prescribed gastro-protective. Drug interactions with co-prescribed drugs could be anticipated in 45 cases. **Conclusion**: The usage of gastro-protective is essential in drug therapy; however, over-use can increase adverse effects, drug interactions, and even wrong therapy.

Keywords: gastro-protective drugs, Drug utilization, Rationality, Prescriptions

INTRODUCTION

The evolution of antacids, H_2-antagonists (H2RAs), proton pump inhibitors (PPIs) and prostaglandin analogues has improved the outcome of acid-peptic diseases.

For last few decades, there has been a significant rise in the use of gastro-protective drugs **(GPDs)**, both in the hospital setting and in the out-patient setting, in India, as well as in other countries [1-4]. According to the indication criteria established by different scientific societies, there has been also arise in irrational use of these drugs in prescriptions along with increase in pharmaceutical expense of the patients[5].

Study of prescriptions is of a much help for the health care professionals to improve the quality of medicinal care. The quality of health care, particularly as regards the rational use of drugs, depends on a wide range of factors, including a correct diagnosis, prescription of correct drugs, adequate administration for required time and considerations to cost of therapy [6].

The objective of the present study is to evaluate trend of co-prescription of GPDs especially with non-steroidal anti-inflammatory drugs (NSAIDs), their frequency of use and to anticipate the drug interactions, in a tertiary care hospital set-up.

MATERIALS AND METHODS

This is a prospective, observational study over a period of 6 months. After approval by the Institutional Ethics Committee, the study was conducted in indoor patient departments of a tertiary care teaching hospital (L.G

General Hospital). This study has been conducted by the department of pharmacology with help of other departments of tertiary care hospital. Written and informed consent was taken from the eligible patients included in the study. Data regarding the drugs was collected by reviewing the prescriptions containing gastro-protective drugs, during study period.

INCLUSION CRITERIA- (1)All indoor patients of any age and either sex (2)Pregnant women

EXCLUSION CRITERIA- (1)OPD patients (2)Unconscious and seriously ill patients.

Statistical Analysis: For analyzing the rationality aspect of the preparations prescribed- Goodman and Gillman 12th Edition (2011), Harrison's Principles of Internal Medicine 18th Edition (2012).

RESULTS

- Out of 200 prescriptions, 133 (66.5%) were found prescribing the GPDs, either as an individual or in combination with other drugs.
- Out of 133 patients, 88 were male and 43 were female. That suggests that GPDs are more pre
- Prescribed in male than female.
- GPDs in found more prescribed in the age group of 31-40(39.84%)

[Table-1]

Age of patients	Number of prescription
10-20 years	0
21-30 years	9 (6.7%)
31-40 years	53 (39.84%)
41-50 years	38 (28.57%)
51 years and over	18 (13.53%)

GPDs were co-prescribed with different classes of drugs of which NSAIDs (34.83%) were the most common, followed by antimicrobials (20%), anticoagulants (14.83%), corticosteroids (11.61%), multivitamins plus haematinics (8.38%), Opioids (4.5%), Calcium (3.2%), Laxatives (1.93%) and Levocetrizine (0.64%). [Fig-1]

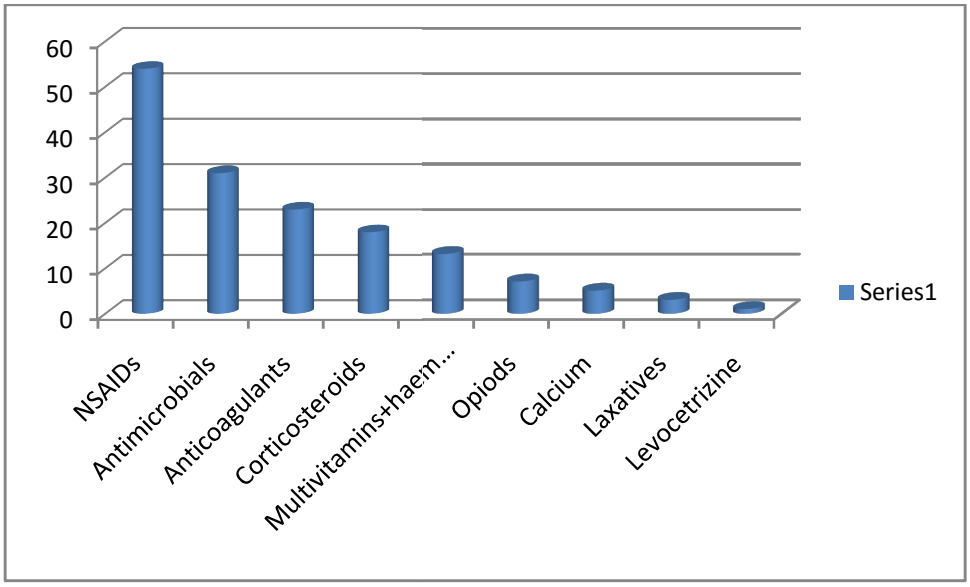


Fig-1: Gastro protective drugs prescribed with other drugs

The PPIs (66.66%) were found to be the most commonly prescribed gastro-protective, followed by the H2RAs (24.11%), antacids (7%) and Sucralfate were found prescribed in (2.1 %) patients. [Fig-2]

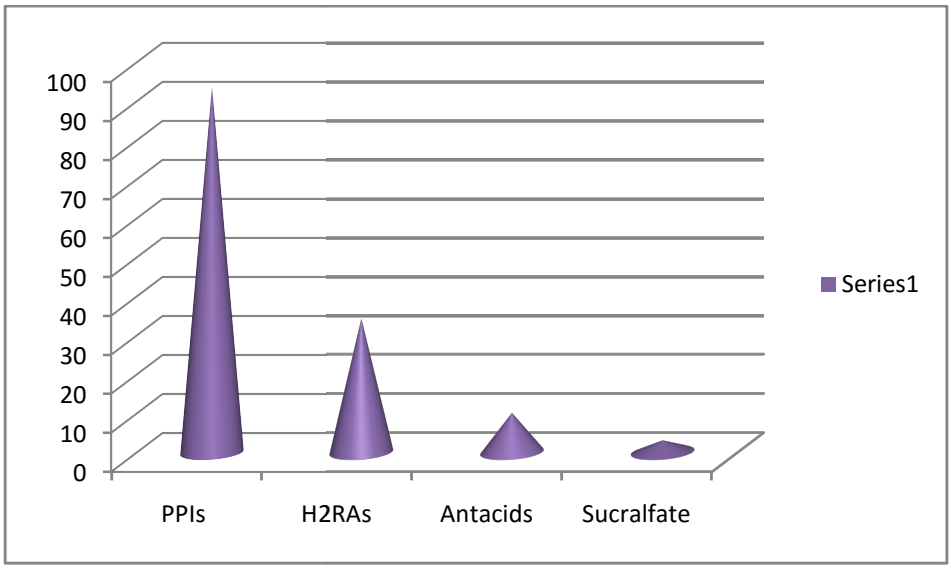
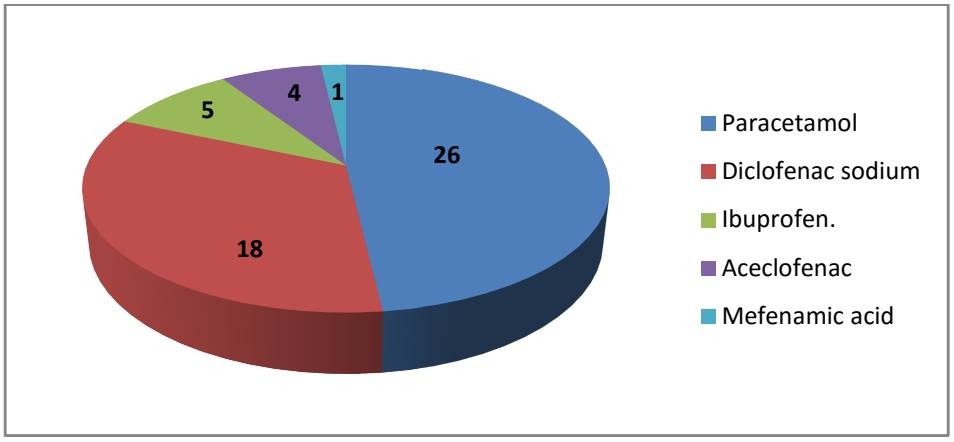


Fig-2:GPDs prescribed in the study prescriptions

- The Paracetamol were found to be the most commonly prescribed NSAIDs with GPDs, followed by the diclofenac sodium, aceclofenac, mefenamic acid and ibuprofen.

Type of NSAIDs	Number of drugs=54
Paracetamol	26 (48.10%)
Diclofenac sodium	18 (33.30%)
Ibuprofen.	5 (9.20%)
Aceclofenac	4 (7.40%)
Mefenamic acid	1 (1.85%)



In our study, we found out that gastro-protective agent preparation was co-prescribed along with Multivitamins, anti-platelet agents (Clopidogrel), Aspirin and calcium preparation. The PPIs were also seen co-prescribed with H2RA and Sucralfate [Fig-3].

Anticipated drug-drug interactions	No. of Prescriptions
Clopidogrel+ Proton pump inhibitors	9
Aspirin+ Proton pump inhibitors	8
Multivitamins + gastro-protective agent	1 1
Calcium + gastro-protective agent	9
Proton pump inhibitors+ H2 Blockers	5
Proton pump inhibitors+ Sucralfate	3

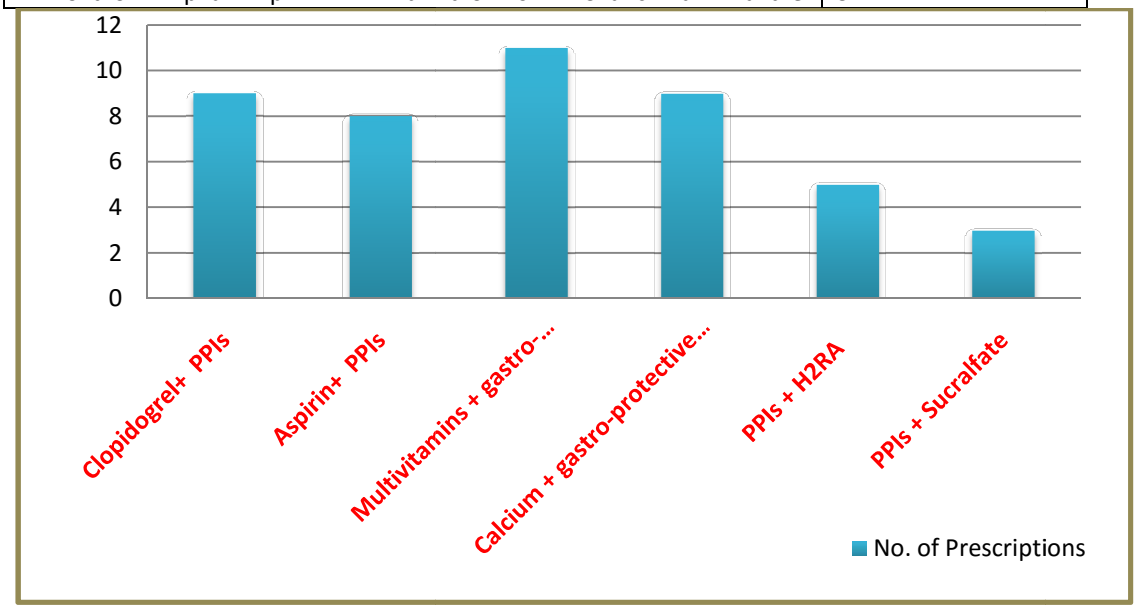


Fig-3: Anticipated drug-drug interactions

DISCUSSION

Gastrointestinal symptoms are very common nowadays. The most effective treatment for Gastrointestinal symptoms like dyspepsia or gastro esophageal reflux disease in primary care is reduction of gastric acid secretion, which can be achieved by using gastro-protective agents. Pharmacological acid suppression has been so successful in healing peptic ulcer (PU), GERD and managing patients with NSAID-associated ulcer that elective surgery for ulcer disease has been reduced and operations are today performed only in selected patients [9].

Although the study sample was relatively small, the study still provides important information pertaining to knowledge of gastro-protective drugs prescribed to general population.

The prescription of gastro-protective drugs was found neither related to age of the patients nor to the sex of the patients.

We have evaluated different drugs co-prescribed with gastro-protective's in all our study prescriptions. In this study, it was found that gastro-protective's were predominantly co-prescribed with four major classes of drugs-NSAIDs, antimicrobials, corticosteroids and anti-platelet drugs for the purpose of gastro-protection. Similar results were obtained in a study by Vipin Kumar Singh et al., in gastroenterology department of a tertiary care teaching hospital in North India, where also NSAIDs were the most common group of drugs co-prescribed with gastro-protective's [10] In a study by Niklasson et al., in Sweden, corticosteroids were predominantly seen co-prescribed with gastro-protective's in hospitalized patients with pulmonary disease [11]

In our analysis, six types of NSAIDs were prescribed in Prescription: diclofenac sodium, paracetamol, aceclofenac, mefenamic acid and ibuprofen. Paracetamol was the most common NSAID with which gastro-protectants were co-prescribed. Surprisingly, we found that patients receiving more than one NSAID at a time.

The gastro-protective agents seen prominently co-prescribed with NSAIDs in our study were PPIs (68.75%), omeprazole and Pantoprazole. In a study conducted by Ajay Kumar et al., in an orthopedics outpatients department of a tertiary care hospital in West Bengal, Famotidine (46.12%) was the most frequently used gastro-protective co-administered with non-steroidal anti-inflammatory drugs [12].

Several studies revealed that around 70% of patients admitted to nursing facilities or being hospitalized were on acid suppressive medication with more than 50% of them without an appropriate diagnosis justifying prescription[13,14] Another major health concern is the current inappropriate self-medication habit. Approximately 80% of patients with dyspeptic disorders of minor severity do not seek medical advice and simply use OTC available acid suppressive drugs [15].

Due topolypharmacy patients may develop other diseases. Example:Gastric acid is an important barrier against pathogen invasion through the gastrointestinal tract. Although it is well known that a raised pH increases bacterial and virus colonization. Acid-suppressive drugs such as H_2RAs and PPIs are associated with an increased risk of community-acquired pneumonia, probably because of reduction of gastric acid secretion, facilitating oral infections [16].

Several observational studies have suggested that PPIusersare at higher risk of developing and *Clostridium difficile*–associated diarrhea [17].

Drug–drug interactions (DDIs) are another concern with acid suppression. It may result from pharmacokinetic interactions, pharmaco-dynamic interactions, a combination of these mechanisms, or other unknown mechanisms.

Proton pump inhibitors (PPIs), they are routinely prescribed for the prevention of gastrointestinal bleeding in patients receiving a dual anti-platelet therapy (Clopidogrel and aspirin). There are many CYP450-related interactions between PPIs and other drugs. An FDA safety alert in November 2009 [18] recommended avoiding the use of omeprazole or esomeprazole with clopidogrel, warning that the CYP-mediated interaction could reduce clopidogrel's effectiveness. PPIs have been associated with an increased risk of vitamin and mineral deficiencies impacting vitamin B_{12}, vitamin C, calcium, iron and magnesium metabolism. US Food and Drug Administration (FDA) issued warnings in 2010 and 2011 postulating a relationship between long-term PPI use and osteoporosis-related fracture and hypomagnesaemia, respectively FDA, 2010, 2011.To avoid most drug interactions, gastro-protectants should be taken 2 hours before or after ingestion of any other drugs.

CONCLUSIONS

There is significant overuse of acid-suppressive therapy in hospitalized patients. Also there is need to prevent inappropriate overuse of PPI and multivitamins where it is not indicated. Appropriate use of these medications will minimize Drug–drug interactions and developing other unknown, undesirable condition. Future research will require a focus on various populations across all ages to continue to screen for drug safety.

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7
ORIGINAL ARTICLE

HISTOPATHOLOGICAL EVALUATION OF BENIGN PROLIFERATIVE BREAST LESIONS

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ABSTRACT

INTRODUCTION: Benign proliferative breast lesions deserve attention because of high prevalence and impact on women's life and due to cancerous potential of some histological types. **AIMS AND OBJECTIVES:**
i) To establish the significance of histopathology in the diagnosis of benign proliferative breast lesions.
ii) To ascertain the relative frequency of each type of lesion in different age groups and its significance.
iii) To compare the study with other different study. **MATERIAL AND METHOD:**
Total 3077 biopsy was received in histopathology department of our institution during August 2015 to July 2016. Among these, 120 cases were of breast lesions. **RESULT:** Out of 120 breast lesions, 97 were of benign lesions and 23 were of malignant lesion in different age groups. Among these 97 benign proliferative breast lesions, 46 cases (42.22%) has fibroadenoma , 8 cases (8.24%) has epithelial hyperplasia, 27 cases (27.83%) has fibrocystic disease of breast ,5 cases (5.15%) has gynecomastia, 6 cases (6.18%) has phylloid tumour, 2 cases (2.06%) has intraductal papilloma and 3 cases (3.09 %) has adenoma. **CONCLUSION:** Based on morphological distribution, fibroadenoma constitute maximum number of cases followed by fibrocystic disease of breast. Phylloid tumor is rare but it has clinical relevance. Fibroadenoma is more common in younger age group (16-30 years) whereas fibrocystic disease of breast is more common in older age group (31-45 years).

KEY WORDS: Breast, Benign proliferative lesion, Histopathology.

❖ INTRODUCTION

The epithelium of the breast may undergo a wide variety of benign physiological alterations with age which usually do not occur uniformly throughout the tissue. As a result of such changes various clinical abnormalities are produced.

Benign proliferative breast lesions deserve attention because of their high prevalence and their impact on women's life and due to cancerous potential of some histological types. The mammary gland develops in

the embryo from an invagination of the superficial ectoderm which form elementary duct in the connective tissue. Lobule formation occurs after menarche and increases with age up to about 25 years. [1,2]

The breast has two main types of tissue :- glandular and stromal tissue. The glandular part includes lobules and ducts. Both are lined by inner secretory epithelial cells and outer myoepithelial cells. Hormones and growth factors act on stromal and epithelial cells to regulate the developmental maturation and differentiation of mammary gland cells. In adult breast, cyclical changes occur during the menstrual cycle that result in an increased rate of cell proliferation during luteal phase but complete differentiation with maximum development of lobular tissue takes place only through pregnancy and lactation. At menopause, the total numbers of lobules diminishes.

Benign proliferative breast disease constitutes a heterogeneous group of disorders including developmental abnormality, epithelial and stromal proliferation, inflammatory lesions and neoplasm.

❖ CLASSIFICATION

Histopathological classification [3, 4]

1) Non proliferative breast changes
2) Proliferative breast changes without atypia
3) Proliferative breast changes with atypia

❖ Fibroadenoma:

Fibroadenomas are the most common benign tumor of the female breast. They typically occur in patients between the ages of 20 and 35 years. Grossly, they are sharply demarcated, firm mass, usually no more than 3 cm in diameter. The cut surface is solid, grayish white, and bulging, with a whorl-like pattern and slit like spaces. Microscopically, it varies in appearances depending on the relative amounts of glandular and connective tissue. The tubules are composed of cuboidal or low columnar cells with round uniform nuclei resting on a myoepithelial cell layer. The stroma is usually made up of loose connective tissue but it may be partially or totally composed of a dense fibrous type. [5]

❖ Epithelial hyperplasia:

It is common form of proliferative breast disease defined by the presence of more than two cell layers.

Types: - 1. Ductal lesion – Simple & atypical ductal hyperplasia
2. Lobular lesions

❖ Fibrocystic disease:

Fibrocystic disease or fibrocystic changes (FCCs) constitute the most frequent benign disorder of the breast. Such changes generally affect premenopausal women between 20 and 50 years of age [6-7]. Although many other names have been used to describe this entity over the years, (including fibrocystic disease, cystic mastopathy, mammary dysplasia, chronic cystic mastitis, mazoplasia, Reclus's disease, Schimmelbusch disease), the term "fibrocystic changes" is now preferred, because this process is observed clinically in up to 50% and histologically in 90% of women [8]. Fibrocystic change without atypia are associated with a 1.5 to 2 fold increase in risk, whereas atypical hyperplasias are associated with a four to five fold increase in breast cancer risk.[9]

It is an extremely important lesion because of its high frequency, ability of some of its sub types to stimulate clinical, radiographic, gross and microscopic appearance of carcinoma. Basic morphologic

changes include cystic change, apocrine metaplasia, fibrosis, calcification, chronic inflammation and epithelial hyperplasia.

❖ **Phylloid tumour**

Phylloid tumor (cystosarcoma phylloides) arises from intralobular stroma and can occur at any age but most present in the sixth decade with the median age of 45 at the time of diagnosis. Benign phylloid tumors, like malignant ones, can grow to be large size, creating a visible lump on breast and perhaps even breaking through the skin, causing pain and discomfort.

Biphasic tumor resembling fibroadenoma but with hyper-cellular mesenchymal component organized in leaf-like pattern around benign epithelial/ myoepithelial lined spaces. Grossly, the tumor is round, relatively well circumscribed, and firm. The cut surface is solid and gray white and shows the cleft like spaces that give the tumor its name. Microscopically, the two key features of Phylloid tumor are stromal hyper-cellularity and the presence of benign glandular elements as an integral component of the neoplasm [5].

❖ **Intraductal papilloma:**

Intraductal papilloma of the breast occurs at an average age of 48 years. It can arise in large or small ducts, consequently; it can be identified grossly as a polypoid intra-luminal mass or be found only on microscopic examination. The lesion is soft and fragile, and may have areas of hemorrhage in it. Microscopically, papillomas are complex, cellular, and often intricately arborescent.

Features favoring malignancy in a papillary breast lesion are well-developed stroma in the papillary folds, the presence of two cell types (luminal and myoepithelial), normochromatic and often oval nuclei, scanty mitotic activity, the presence of some foci of apocrine metaplasia in some foci, and a lack of cribriform or trabecular patterns[10].

❖ **Adenoma:**

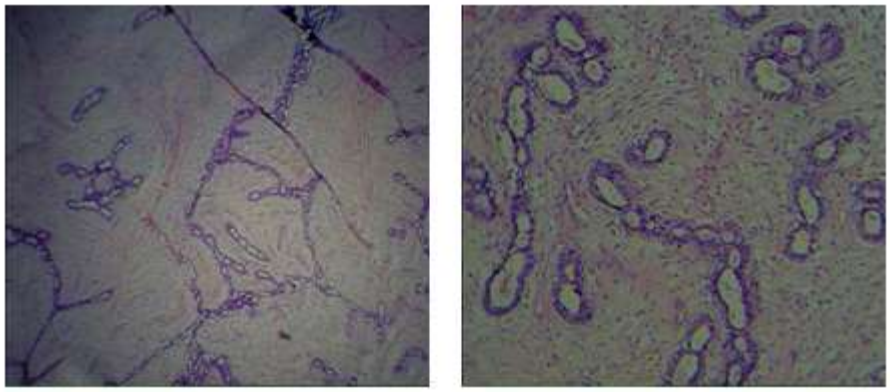
It is a pure epithelial neoplasm of the breast characterized by benign overgrowth of milk duct or lobules. Adenomas of the breast can be divided into the following categories [11].

a) Tubular adenoma
b) Lactating adenoma
c) Apocrine adenoma

❖ **MATERIAL AND METHOD**

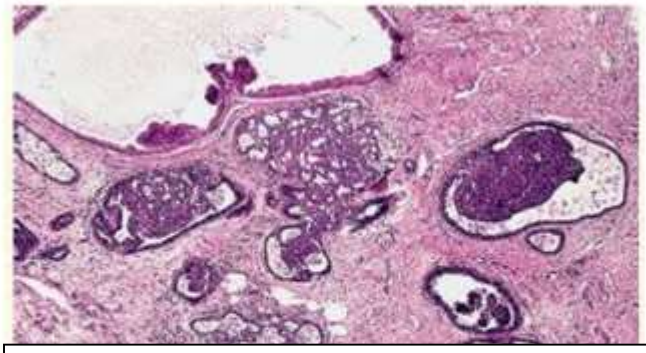
Total 3077 biopsy was received in histopathology department of our institution during August 2015 to July 2016. Among these, 120 cases were of breast lesions.

A detailed history of each patient regarding age, sex, chief complaints & other relevant findings were taken. The specimen was fixed in 10% formalin. Each specimen was examined grossly. Representative tissue bits were sampled from the specimen. Tissue bits were processed by routine paraffin embedding technique. Tissue sections of 4-5µm thickness were cut and stained with Hematoxylin and Eosin stain.

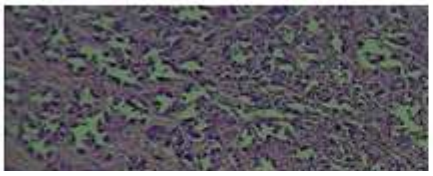


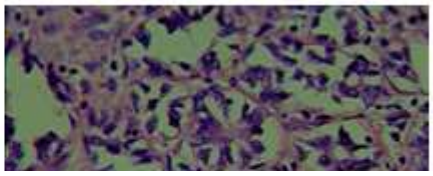
FIBROADENOMA:(A) 4X (B) 10X

Fibroadenoma 10x shows pericanalicular (Open glandular-spaces) & intracanalicular compressed glandular spaces.

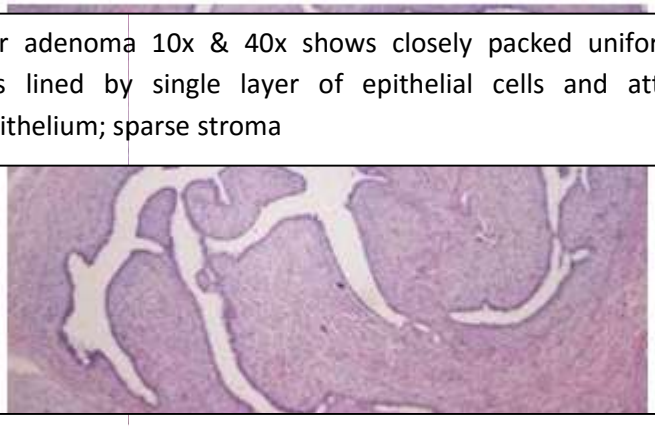


Fibrocystic disease shows cystic dilation, apocrine metaplasia, florid ductal hyperplasia and fibrosis.





Tubular adenoma 10x & 40x shows closely packed uniform small tubules lined by single layer of epithelial cells and attenuated myoepithelium; sparse stroma



Phyllodes tumor 10x shows exaggerated intracanalicular pattern & increased stromal cellularity.

❖ **OBSERVATION & RESULT**

Out of 120 breast lesions, 97 were of benign proliferative breast lesions and 23 were of malignant lesions. In this study these 97 benign proliferative breast lesions were studied.

❖ **Morphological distribution of cases (According to histopathological diagnosis)**

HISTOPATHOLOGICAL DIAGNOSIS	NO. OF CASES	PERCENTAGE%
Fibroadenoma	46	47.22
Epithelial hyperplasia	08	8.24
Fibrocystic disease	27	27.83
Gynecomastia	05	5.15
Phylloid tumour	06	6.18
Intraductal papilloma	02	2.06
Adenoma	03	3.09
TOTAL	97	

Fibroadenoma was the commonest histological lesion seen (47.22%) followed by fibrocystic change (25.4%)

❖ **The age distribution of the cases studied was as given below:**

AGE (IN YEARS)	NO. OF CASES	PERCENTAGE%
16-20	13	13.40
21-30	45	46.39
31-40	34	35.05
41-50	05	5.15
TOTAL	97	

In the present study youngest patient is 16 years old and oldest is 49 years old. Largest no. of cases (46.39 %) are in 21-30 age group.

❖ **Morphological distribution of cases according to age:**

Age group (in years)	Fibrocystic disease	Fibroadenoma
16-20	-	17
21-30	07	26
31-40	15	03
41-50	05	-
total	27	46

Fibrocystic diseases are more common in older age group (31-40years) whereas, Fibroadenomas more commonly occurred in younger age group (21-30years)

❖ **DISCUSSION**

- The data obtained in the present study was compared with data obtained by other author. Morphological distribution of cases in present study and other study.

Histopatholoical diagnosis	Present study%	Cole & Elwood%
Fibroadenoma	42.22	32.8
Epithelial Hyperplasia	8.24	9.2
Fibrocystic Disease	27.83	25.4
Gynecomastia	5.15	5.9
Phylloid Tumour	6.18	6.1
Intraductal Papilloma	2.06	2.2
Adenoma	3.09	10.1

In the present study, maximum number of cases are fibroadenoma followed by fibrocystic disease. This is comparable to study by Cole and Elwood. [12]

❖ CONCLUSION

Based on morphological distribution, fibroadenoma constitute maximum number of cases followed by fibrocystic change. Fibroadenoma is more common in younger age group (16-30 years) whereas fibrocystic change is more common in older age group (31-45 years).

In benign proliferative breast lesions, biopsy and histopathological study constitute one of the most important investigations to prove a definitive diagnosis and to rule out possibility of malignancy in any breast lump.

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8

Original article

STUDY OF CORRELATION OF BODY MASS INDEX(BMI) WITH BLOOD PRESSURE IN ADOLESCENTS.

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Key Words: Body Mass Index, Blood Pressure (Systolic Blood Pressure, Diastolic Blood Pressure), Overweight, Obese , Pre-hypertension, Hypertension.

Introduction: Obesity is a state of excess adipose tissue mass. The most widely used method to gauge obesity is the body mass index, which is equal to weight/height^2(in kg/m^2). BMI changes throughout the growth and development of adolescent. It can be used as an indicator for tracking body size throughout the cycle. As BMI increases throughout the range of moderate and severe overweight, so also does the risk increase for cardiovascular complications including hypertension. **Material and Method:** The present study was conducted to study correlation of Body Mass Index (BMI) with blood pressure in Adolescents. Study Population consisted of 100 subjects including both male and femalebetween age group of 15-17 yrs.All the subjects were divided in groups A and group B according to BMI.Group A Subject BMI $\leq$ 24.9.Group B Subject BMI $\geq$ 25. Height is measured by Measure Tape, Weight is recorded by standard weighing scale machine and Blood Pressure recording by clinical Sphygmomanometer and stethoscope. **Results:** The statistical analysis was done using correlation unpaired t-test. There was significant positive correlation between BMI with systolic as well as diastolic blood pressure of male and femalein adolescents age group. **Conclusion:** In present study, Group A Body Mass Index of Male With Systolic Blood Pressure and Diastolic Blood Pressure, the p value are 0.0139 and 0.0280 respectively (P<0.05) showing significant positive correlation between body mass index and blood pressures.Group B, Body Mass Index of Female With Systolic Blood Pressure and Diastolic Blood Pressure, the p value are 0.0099 and 0.0025 respectively (P<0.05) showing significant positive correlation between body mass index and blood pressures. The mechanism by which excess fat deposition (obesity) influences BP in adolescents appears to be through increased sympathetic activity, renin angiotensin -aldosterone system activation, and compression of kidneys. Changes in insulin sensitivity and its compensatory hyperinsulinemia lead to sodium and water retention and stimulation of sympathetic activity, which may in turn lead to hypertension. The recognition of elevated BMI in the present study as important factors associated with increased risk of developing elevated BP among adolescents may help target prevention towards high-risk individuals in this age group. This is especially important because of evidence linking adolescent obesity with metabolic abnormalities and risk of cardiovascular disease in adulthood.

Key Words: Body Mass Index, Blood Pressure (Systolic Blood Pressure, Diastolic Blood Pressure), Overweight, Obese , Prehypertension, Hypertension.

Introduction:

Obesity is a state of excess adipose tissue mass. The most widely used method to gauge obesity is the body mass index, which is equal to weight/height^2 (in kg/m^2). BMI changes throughout the growth and development of adolescent. It can be used as an indicator for tracking body size throughout the cycle. As BMI increases throughout the range of moderate and severe overweight, so also does the risk increase for cardiovascular complications including hypertension.

The origin of adult obesity and its adverse health consequences often begins in childhood. It has been estimated that hypertension accounts for 6% of deaths worldwide. In industrialized societies, blood pressure increases steadily during the first two decades. In adolescents, changes in blood pressure are associated with growth and maturation.

Hence in view of above, this study, “study of correlation of body mass index (BMI) with blood pressure in adolescents.” is undertaken which will scientifically contribute to identify at risk population well in advance and will also help to implement necessary action to obtain desired physical fitness in the form of optimum body composition and thereby to prevent/delay future health hazards.

Aims and Objectives:

1. To determine BMI of Adolescent.
2. To determine Blood pressure of Adolescents.
3. To find out correlation if any, between body mass index and blood pressure.
4. To advice if necessary, about diet and exercise to obtain desired physical fitness in the form of optimum body mass index of adolescents.

Material and Method:

The present study was conducted in 100 Adolescent 15-17 Yrs. age group.

All the subjects were divided in groups A and group B according to BMI.

Group A Subject BMI $\leq$ 24.9.

Group B Subject BMI ≥ 25.

GROUP	MALE	FEMALE
A: BMI ≤ 24.9	39	41
B: BMI ≥ 25	09	11

Students belonging to same socioeconomic strata were selected from school by simple random technique.

After getting permission from school authority the study was conducted. School authority had taken permission from students and parents. The Pro-forma was filled by students with the help of their parents. Age and date of birth reported by students were verified against the school records, which in turn were based on the student's birth certificate.

Exclusion Criteria:

1. Adolescents above 17 Yrs.
2. Underweight Adolescents.
3. Adolescents having any acute illness.
4. Present or Past History suggestive of cardiovascular, respiratory or any other systemic illness.
5. Family history of hypertension, asthma, diabetes.

Body Mass Index (BMI):

1. Height: For measurement of Height marking were made on the wall using measuring Tape. The students was asked to stand upright, barefoot on the ground with heels, buttocks, upper back, and back of head making firm contact with the wall (this helps the subject to stretch to his full height). The chin is tucked in slightly and the head is held erect. The cardboard was pressed firmly onto the subject's head to form a right angle to the wall and the subject was asked to bend his knees slightly when he steps away so that the cardboard is not disturbed before the height is recorded.
2. Weight: Weight was recorded using standard weighing scale machine. Measurement of weight was done at the same time of the day, with same instrument and to the same degree of accuracy to the nearest of 0.5 kg.
3. Body Mass Index: Body mass index was calculated based on the formula,

   BMI= weight in kg. /height in meter ^{2}

4. Blood Pressure: For Recording Blood Pressure here we used instrument are clinical Sphygmomanometer and Stethoscope and record the blood pressure by Auscultatory method.

Before recording the blood pressure, adolescents in group of 10 were taken to a separate room away from noise and they were explained in detailed, the procedure of blood pressure recording and they were reassured that the procedure is neither painful nor harmful.

All efforts were made to eliminate factors which might affect the blood pressure such as anxiety, fear, crying, laughing, recent activities in order to facilitate the blood pressure recording under simulated "basal" or "near basal" condition. Blood pressure was recorded only when the student had become accustomed to the observer, instrument, and surroundings.

After giving rest for 10 minutes blood pressure was recorded in sitting position with his back supported, feet on the floor and right arm supported. Right arm was used for consistency and for comparison with standard tables and because of the possibility of coarctation of the aorta, which might lead to false (low) readings in the left arm.

Blood pressure readings were expressed to the nearest 2 mmHg.

All blood pressure recordings were taken on the same time of the day, i.e. during Morning hours and recorded by the same person and by the same instrument.

Systemic examination was also done to exclude cardiovascular, renal, and other disease which could affect blood pressure.

Statistical analysis was done by using unpaired t-test.

Results: Group A

Male (48)	Blood Pressure	Mean	Standard Deviation	P Value
BMI ≤ 24.9(39)	SBP	124.87	11.6329	0.0139
BMI ≥25 (9)	SBP	135.11	14.5983	
BMI ≤ 24.9(39)	DBP	77.23	7.6449	0.028
BMI ≥25 (9)	DBP	83.11	10.0554	

***Table 1**: Showing Correlation of Body Mass Index of Male with SBP and DBP in Adolescent Age Group:-*
SBP= Systolic Blood Pressure,
DBP= Diastolic Blood Pressure,
P Value< 0.05 is Significant.

GROUP: B

Female (52)	Blood Pressure	Mean	Standard Deviation	P Value
BMI ≤ 24.9 (41)	SBP	117.46	10.2471	0.0099
BMI≥ 25 (11)	SBP	126.18	12.2132	
BMI ≤ 24.9 (41)	DBP	78.19	8.0722	0.0025
BMI ≥25 (11)	DBP	86.36	8.6634	

***Table 2**: Showing Correlation of Body Mass Index of Female with SBP and DBP in Adolescent Age Group:-*
SBP= Systolic Blood Pressure,
DBP= Diastolic Blood Pressure,
P Value< 0.05 is Significant.

Conclusion:

In present study, Group A Body Mass Index of Male With Systolic Blood Pressure and Diastolic Blood Pressure, the p value are 0.0139 and 0.0280 respectively (P<0.05) showing significant positive correlation between body mass index and blood pressures.

Group B, Body Mass Index of Female With Systolic Blood Pressure and Diastolic Blood Pressure, the p value are 0.0099 and 0.0025 respectively (P<0.05) showing significant positive correlation between body mass index and blood pressures.

Classification as “Pre-hypertensive” or even at risk for hypertension may cause obese subjects to take notice. As BMI is a reflection of life style, addressing it would be appropriate when subjects are in that range. An elevated BMI being associated with pre-hypertension may suggest that such individuals are at increased risk of progressing to frank hypertension. Therefore weight management programs are more important for these adolescents age group than the life style modification programs targeted at hypertension.

Prevalence of Pre-hypertension among overweight/obese suggested an early clinical detection of pre-hypertension and intervention including life style modification particularly weight management.

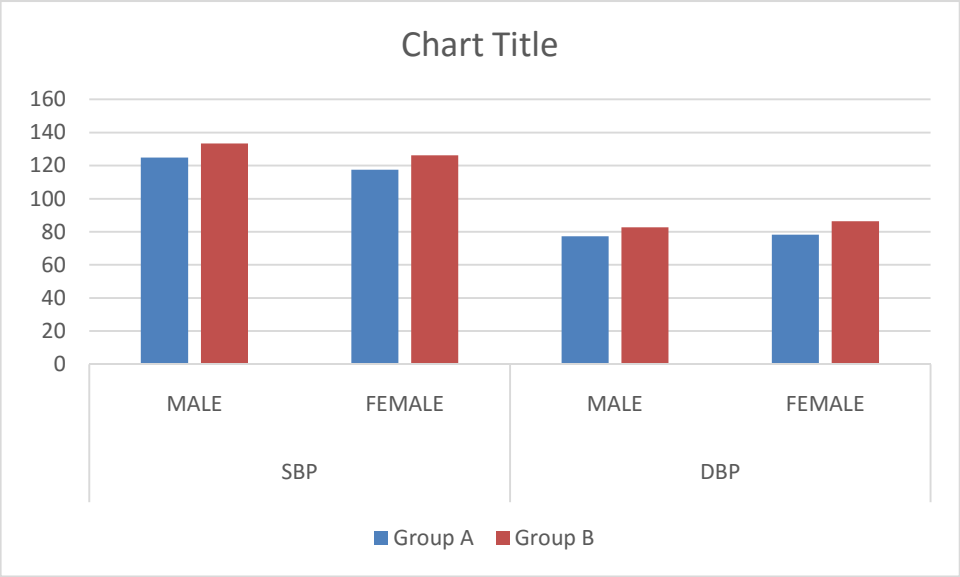

CHART: SHOWING CORRELATION BETWEEN BODY MASS INDEX AND BLOOD PRESSURE IN GROUP A AND GROUP B.

Discussion:

Hypertension is the most common, most potent universal contributor to cardiovascular mortality. Elevated blood pressure, labile or fixed, systolic or diastolic, at any age, in either sex is a contributor to all forms of cardiovascular diseases. Studies on Indian higher secondary school have demonstrated that the prevalence of hypertension in overweight children is significantly higher than that among normal children. Also Studies on urban Indian schoolchildren from selected regions report a high prevalence of obese and overweight children. Studies on hypertension in childhood have the important advantage that they may help in the control and possibly prevention of high blood pressure before its harmful sequele can occur. For any proposed value of body mass index (BMI), Indians have a higher magnitude of adiposity, abdominal obesity and a lower muscle mass than white Caucasians 7. The present study was carried out in adolescents between the age group of 15 to 17 years to correlate between body mass index and blood pressure. Body mass index correlated separately with systolic and diastolic blood pressure in the groups.

***Similar results were also observed by other workers*.** Gilles Paradis et al4 (2004) by multiple linear regression analysis found that body mass index was consistently associated with SBP and DBP in all age-gender groups. David S. Freedman et al8 found that overweight was more strongly related to elevated levels of DBP and concluded that overweight children and adolescents are at a substantially increased risk for adverse levels of several cardiovascular disease risk factors.

Berkey CS et al5(1998) confirmed that greater BMI in adolescence is associated with raised BP. Jonathan Sorof6 (2002) concluded that obesity has become an increasingly important medical problem in children and adolescents. Obese children are at approximately a 3-fold higher risk for hypertension than non-obese children. In addition, the risk of hypertension in children increases across the entire range of body mass index (BMI) values.

Aneesa M. Al -Sendi et al7 in 2003 showed that weight and height in boys and weight only in girls were significantly associated with systolic BP independent of age or percentage fat. BMI and percentage body fat were significantly and positively associated with the risk of having high BP in the boys and girls.

Schiel R et al8(2006) after investigating the associations and interactions between height, weight, body-mass index and blood pressure values in overweight / obese and normal weight children and adolescents found that overweight and obese children had significantly higher blood pressure values both systolic as well as diastolic than control subjects. Manu Raj et al9 in 2007 determined the relationship of obesity with blood pressure. Systolic or diastolic incident hypertension was found in 17.34% of overweight children versus 10.1% of the remaining students.
Survey by Neamatollah Ataei et al10 (2009) identified a high prevalence of overweight that was associated with elevated SBP among preschool-aged children in Iran and concluded that the effect of higher BMI on mean SBP is present in childhood and can be used as a predictor of high SBP even in children as young as 1–6 years.

Obesity: Cause of Hypertension: One of the causes of hypertension is abnormal sodium and fluid balance. In obesity hypertension, abnormal kidney function initially is due to increased tubular sodium re-absorption, which causes sodium retention and expansion of extracellular and blood volumes. The increase in sodium re-absorption results in a rightward shift in the renal pressure-natriuresis relation and BP elevation. Thus the obese individual requires higher levels of BP to maintain sodium and fluid homeostasis. There are several potential mechanisms that could mediate the sodium retention and hypertension associated with obesity, including sympathetic nervous system activation, renin-angiotensin-aldosterone system activation, and compression of the kidney.

a. Sympathetic Nervous System Activation
The sympathetic nervous system (SNS) plays a critical role in the regulation of cardiovascular homeostasis. SNS activation plays an important role in the pathophysiology of obesity hypertension in humans. There are number of proposed mechanisms linking obesity with SNS activation including baroreflex dysfunction, hypothalamic-pituitary axis dysfunction, hyperinsulinaemia/insulin resistance, hyperleptinaemia, and elevated circulating Angiotensin II concentrations.

b. Renin-Angiotensin-Aldosterone System (RAAS) Activation
Several components of Renin-Angiotensin-Aldosterone System are elevated in obese human despite sodium retention. In addition, plasma renin activity declines with weight loss and is correlated with the reduction in BP. Adipose tissue expresses many components of RAAS, and this local system has been implicated in obesity hypertension.

c. Compression of the Kidney
Intra-abdominal pressure is directly related to the degree of abdominal adiposity, and, thus, elevated intra-abdominal fat could act to compress the kidney, increase sodium and water retention, and elevate BP. In addition, the ectopic deposition of fat within the rigid renal capsule could also elevate intra-renal pressure, result in sodium and water retention, and increase BP11.
Both non-pharmacologic and pharmacologic approaches are useful in managing children with elevated blood pressure. Treatment modalities used in obese children and adolescents can be categorized into combination of: caloric restriction, anorectic drugs, increased physical activity, therapeutic starvation, surgery, and habit pattern changes based on social learning therapy. Certainly drugs, starvation, and surgery are unacceptable treatment strategy for most children.

OBESITY
Selective Insulin Resistance
Hyperinsulinaemia

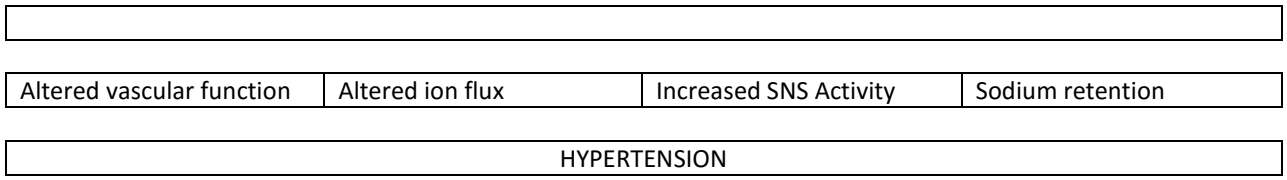

Fig 4: Showing how obesity and selective insulin resistance might result in hypertension.

Socio-Cultural Issues and Adolescent Obesity in India:

There is a general misconception in parents in India and other developing countries that an obese child is a healthy child. In an effort to keep child "healthy" he/she is fed in excess. High burden of school work and academic competitiveness have led to decreased participation in sports and any other form of physical activity. "Fast foods" fads oversee balanced nutrition. Lastly, Adolescents spend more time in front of television and computers at the expense of sports and physical activity.

Prevention of Obesity Hypertension

As indicated earlier, weight gain is almost invariably associated with an increase in BP. Thus prevention of weight gain should be a primary therapeutic target for reducing the problem of hypertension. Regular physical activity and reduced dietary fat intake reduce weight gain in normal weight subjects and weight regain after weight loss in obese individuals. This could be achieved by relatively small lifestyle changes such as adding 15 min of walking each day and reducing portion sizes by a few bites per meal. If successful, lifestyle modification such as the one proposed may have important implications for the prevention of obesity-associated hypertension.

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9

Original article

HAEMOVIGILANCE EFFECT AND ITS UTILITY IN QUALITY MANAGEMENT TO PREVENT BLOOD TRANSFUSION REACTION

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ABSTRACT

INTRODUCTION: Haemovigilance is defined as a set of surveillance procedures covering whole transfusion chain from the collection of blood and its components to the follow up of its recipients, intended to collect and access information on unexpected or undesirable effects resulting from the therapeutic use of labile blood products, and to prevent their occurrence and recurrence.(1) **AIMS AND OBJECTIVES:** An effective effort towards the study of haemovigilance programme by evaluating the different adverse reactions occurring due to blood transfusion in patient receiving regular or temporary blood transfusion. The ultimate goal of a haemovigilance system is to improve the safety of blood transfusion. **METHODS & MATERIALS:** The current study was done at Blood bank AMC MET Medical College & LG Hospital, Ahmedabad. All the adverse reactions related to transfusion of blood components between April-2014 to March-2016 issued were studied. **RESULT:** In this study, total 17264 blood component (PCV, PRC, FFP, CRYO) were issued. From total 20 BTR, 18 BTR due to PCV, and 02 BTR due to PRC. In which 08 patients have febrile reaction, 07 patients have allergic reaction, 02 patients have non TRALI associated dyspnea and 01 patient has uneasiness-giddiness due to the PCV. 02 patients have allergic reaction which occurred due to PRC. **CONCLUSION:** Haemovigilance is an essential component of quality management in a blood system and is needed for the continual enhancement of quality and safety of blood products and transfusion process by monitoring and safeguarding the adverse events associated with the use of blood products.

Key words: HAEMOVIGILANCE , BLOOD TRANSFUSION REACTION.prevention

INTRODUCTION:

- Haemovigilance – Haema: Blood

  Vigilance: watchful

- "**watchful and safe blood transfusion**"

- An adverse event is any untoward occurrence in the blood transfusion chain that might lead to death or life threatening, disabling or incapacitating conditions for donors and/or patients or which results in, or prolongs, hospitalization or morbidity and mortality(2).

- Haemovigilance is an important part of the quality system for blood transfusion. It implies methods for identify errors, adverse event and reactions including alert systems, investigations of complaints, traceability systems, notifications systems and audits of practice(3).

Classification of blood transfusion reactions (6)

- **IMMEDIATE Transfusion Reaction**

1. **Acute Hemolytic reaction:** Hemolytic reaction occurs when the recipient serum contains antibodies directed against the corresponding antigen found on donor red blood cells. This can be A, B, O incompatibility related to different blood group antigen.

2. **Allergic reaction:** Allergic reaction to plasma proteins can range from complaints of hives and itching to anaphylaxis. Such reactions may occur in up to 1 in 200 transfusions of RBCs and 1 in 30 transfusions of platelets.

3. **Febrile non hemolytic reaction:** It is caused by patient antibody directed against antigens presents on transfused lymphocytes or granulocytes. The Risk for febrile reaction is 1 in 1000- 10000. Symptoms usually consist of chills and temperature rise >1 degree C.

4. **Transfusion related acute lung injury (TRALI):** TRALI is caused by most often when donor plasma contains HLA or leukocytes specific antibodies. It leads to sudden respiratory distress from pulmonary edema, typically within 6 hours of transfusion. TRALI most often occur with administration of blood products with plasma, such as FFP.

5. **Anaphylactic reaction:** IgA deficient recipient in whom IgA antibodies react with IgA in donor plasma, leading to activation of complement formation of anaphylotoxin (C3a, C5a). Sign and symptoms produce acute hypotension, shock and dyspnoea after transfusion of a few drop of blood.

6. **Bacterial contamination of donor unit**

7. **Volume overload**

❖ **DELAYED TRANSFUSION REACTION**

1. **Delayed hemolytic transfusion reaction:** This is a reaction occurring several days or weeks after transfusion. This occurs in individual who have been sensitized to a red cell antigen by a previous transfusion or pregnancy so that the antibody is present in low titre. On re-exposure there is a secondary IgG immune response and mainly extra-vascular hemolysis. Symptoms produce like fever, mild jaundice, increased s.bilirubin, anemia.

2. **Transfusion of Infections:** like Hepatitis A, B, C, virus, HIV, Syphilis, Malarial Parasite.

3. **Iron Over load:**

4. **Post Transfusion Purpura:**

5. **Graft vs. host disease:**

Aims and Objectives

- An effective effort toward the study of haemovigilance programme by evaluating the different adverse reactions occurring due to blood transfusion in patient receiving regular or temporary blood transfusion.
- The ultimate goal of a haemovigilance system is to improve the safety of blood transfusion.

Material and Method

- The current study was done at Blood bank AMC MET Medical College & LG Hospital, Ahmedabad.
- All the adverse reactions related to transfusion of blood component between April-2014 to March-2016 issued were studied.

Pre-transfusion check: Clerical check (5)

Patient's name and identification number

- ABO and Rh Grouping

- Cross-matching (Compatibility test on microscopy and GEL card method).
- Technical check during issue
- Near expiry date bags should not be issued to critical patients who are more pretend to have reactions.
- During transportation of blood bag - all the recommended rules are followed strictly.
- Temperature should be maintained.
- Time period of initiation and completion of transfusion.
- During transfusion, any clinical signs and symptoms related to transfusion are observed and managed quickly.

Post transfusion reaction Check (5)

- The implicated unit's identity was verified by checking its number and ABO/Rh type and confirming if it was issued to the intended recipient.
- Clinical history and examination of patient

Post transfusion reaction investigations (5)

Gross examination:

  - Blood bag and transfusion set examination.
  - The patient's supernatant plasma observed.

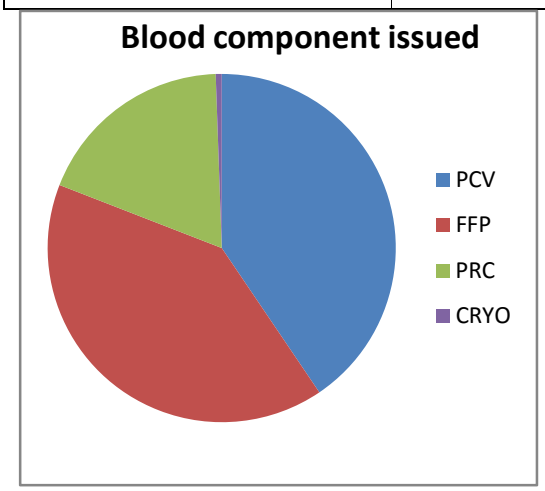
- Serological testing on pre- and post transfusion samples:
  - ABO and Rh typing of the patient and implicated blood component by both forward and reverse.
  - Compatibility done by microscopy and GEL card method.
  - Direct AntiglobulinTest (DAT) and Indirect Antiglobulin Test (IAT) with the patient's post-transfusion sample.
  - Post Transfusion of Urine examination done by routine and microscopy.
  - Blood bags are given for culture to identify any bacterial colony.

Result

- Table 1: BTR occur in various issued blood component

VARIOUS COMPONENT	COMPONENT ISSUED	NO. OF BTR
PCV	6999	**18**
FFP	6967	00
PRC	3201	**02**

CRYO	97	00
TOTAL	**17264**	**20**



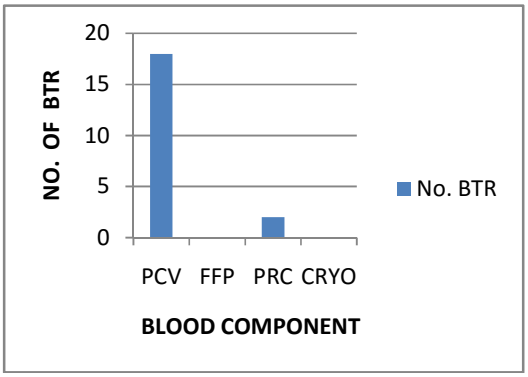
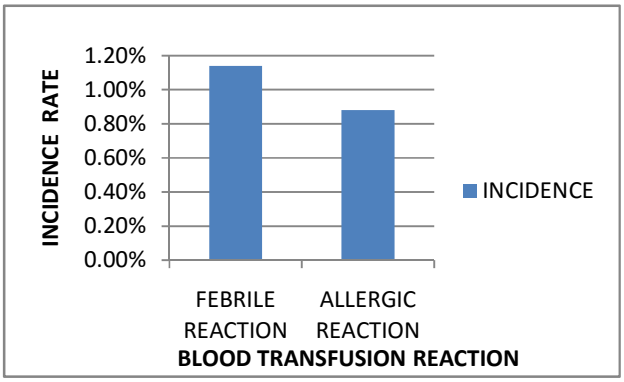


Table 2: Incidence in various BTR

BTR/1000 transfusion	Incidence
Febrile reaction	1.14%
Allergic reaction	0.88%



Classification of transfusion reaction in 20 patients

TYPE	NO. OF PATIENTS
Acute (within 24 hour)	
AcHTR	No reaction
Immune hemolytic	No reaction
Non immune transfusion	No reaction
Acute non hemolytic	No reaction
Febrile	08
Allergic	09
Bacterial sepsis	No reaction
Non TRALI associated dyspnea	02
Headache, chest pain	00
Uneasiness, giddiness	01
Delayed(after 24 hour)	No reaction

Discussion:

- The data obtained in the present study was compared with data obtained by other author.
- Incidence rate of various reactions of present study and other study.

BTR/1000 transfusion	Present study Incidence	Robillard, Karl & Tranz at al. study(4)
Febrile reaction	1.14%	1.20%
Allergic reaction	0.88%	0.96%
Hemolytic	0.00%	0.02-0.07%

Reaction		

- In the present study, incidence of febrile, allergic and hemolytic reaction is lower than other study.
- The study was conducted to assess the risk associated with blood component transfusion and to assess the effectiveness of haemovigilance strategy in our institution.
- The most important concerns are the dependence on the awareness of physicians and other health care workers to (2) look for adverse effects and their reporting, (3) determine whether the effects could have been caused by transfusion.
- The recent testing facilities have lowered the incidence of transfusion-transmitted diseases to the minimum; however, the incidence of adverse events due to human errors, ABO incompatibility, alloimmunization, bacterial contamination, and immunomodulation phenomena remain a matter of concern.(5)

Conclusion

- Haemovigilance is an essential component of quality management in a blood system and is needed for the continual enhancement of quality and safety of blood products and transfusion process by monitoring and safeguarding the adverse events associated with the use of blood products.
- We are following haemovigilance strategy as a pilot effort. So, we are receiving low adverse reactions compare to other studies.

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10

Original Research

COLD PRESSOR TEST IN NORMOTENSIVE AND GRADE – I ESSENTIAL HYPERTENSIVE PATIENTS

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ABSTRACT

Background: Hypertension is creating not only health problems but also economical burden on working population in India. Autonomic nervous system (ANS) via its sympathetic and parasympathetic limbs plays a crucial role in maintaining the blood pressure (BP). Generally hypertensive population reacts differently as compared to normotensive to various forms of the stress.**Aims and Objective:** Present study was carried out to assess the role of ANS, specifically sympathetic nervous system in cardiovascular hemodynamics in Grade-I essential hypertensive subjects compared to normotensive along with the gender variation.**Materials and Methods:** Study included 80 volunteers of age 35 to 50 years, 40 normotensive subjects (20 Male and 20 Female) forms control group and 40 diagnosed Grade–I essential hypertensive (20 Male and 20 Female) forms study group. Systolic and diastolic BP of participants was measured at rest, at 30 and 60 seconds intervals during cold pressor test and at 1 minute interval till BP returns to resting value or at least 5 mm of Hg less than resting systolic BP after the cold pressor test. Then difference between rise in systolic and diastolic BP and resting BP was calculated and compared between control and study group's males and females.**Statistical analysis:**Student's unpaired 't' test was appliedand outcomes were presented as mean (SD).The 'p' value < 0.05 was considered as significant and < 0.001 as highly significant.**Results:**Study found highly significant rise in systolic and significant rise in diastolic BP of hypertensive male where as only significant rise in systolic BP of hypertensive females compared to normotensive group. In females, the rise of diastolic BP was more but it was not statistically significant. Recovery towards basal level

was also slow in hypertensive male and female subjects. **Conclusion:** There is definite cardiovascular ANS dysfunction, specificallysympathetic in Grade–I essential hypertensive patients. More research work is needed to obtain precise relationship between ANS and hyper responsive response to stress in hypertensive patientsas regulation of BP has multiple components.

Key words: Hypertensive, Normotensive, Autonomic Nervous System,Sympathetic Nervous System, Cold Pressor Test, Hyper responsive.

INTRODUCTION:-

Increased systemic arterial blood pressure (BP) or hypertension is one of the common non communicable diseases which clinicians come across. In systemic analysis of global disease burden in 2010, hypertension was considered as one of the leading risk factors. [1]In developing country like India, it's time to effectively address hypertension as a most common non communicable disease to prevent annual income loss of working adult population of families. [2]Systemic review and meta-analysis of hypertension in 2014 had shown that about 33% urban and 25% rural Indians were hypertensive and of these, 25% rural and 42% urban Indians are aware of their hypertensive status. [3]Same study was also concluded that incorporation of multicomponent and multilevelapproaches are needed for better management of BP among Indians, as the rates for awareness, treatmentand control of BP among those on treatment were very low.

Oxford medical dictionary states that 'Essential hypertension' is high BP for which there is no clearly defined aetiology. While considering the physiological aspects of the essential hypertension four major strongly dependent causative elementsviz. phylogeneticallytransferredpredisposition,environmental factors, neurogenic excitatory influences and early structural adaptation of heart and blood vessels,were suggested. [4] Many studies in present decade had come up with various conclusions regarding the essential hypertension. In pathologically increased BP and established hypertension, combined alterations in cardiac, vascular, and renal functions were more common and often associated. [5]Reduced glomerular filtration rate, humoral or genetic disorders stimulating sodium reabsorption in distal nephron, or acquired mechanisms involving renal ischemia, oxidative stress and inflammation, or varying combinations of all these pathways alter the

physiological balance between sodium retention and excretion in kidney causing hypertension. [6]

The human autonomic nervous system (ANS) through its sympathetic and parasympathetic divisions exerts a rapid and effective control on various internal functions including BP. Some of the factors affecting ANS are exposure to cold, emotional stress, exercise, rapid breathing, injury, pain, shock and fear. [7]Cardiovascular reactivity to stress has been hypothesized to be marker for subsequent neurogenic hypertension. [8]One of thesuggested mechanisms of obesity-related hypertension includesincreased sympathetic nervous system activity. [9, 10]Sympatheticactivation had represented a hallmark of essential hypertensive state andadrenergic neural factors may participateat the development and progression of the hypertensive state leading to complications.[11] All these studies had shown the role of ANS and especially sympathetic nervous system in pathogenesis of essential hypertension.

It is generally recognized that hypertensive individuals show greater lability of BP under various forms of stress than do the normotensive persons, but to what extent this characteristics precedes the development of hypertension remains uncertain.[12] Therefore in present study, emphasis has been on the objective assessment of the functioning of ANS especially sympathetic system in relation with cardiovascular hemodynamics in Grade-I essential hypertensive patients in comparison with normotensive subjects along with the gender variation was done. For this purpose cold pressor test a type of stress, was carried out on Grade –I essential hypertensive patients and normotensive individuals to find out its effect on blood pressure.

MATERIALS AND METHODS:

The present study was conducted in Physiology department of one of the major public hospital of Mumbai. Study was approved by the institutional ethical committee and written informed consent of participants was taken. Our study was case-control study consists of 80 volunteers of age 35 to 50 years. Out of 80 participants, 40 normotensive (20 Male and 20 Female) forms the control group and 40 Grade –I essential hypertensive (20 Male and 20 Female) forms the study group. Control group subjects were selected from clerical and

teaching staff of our hospital were as study group subjects were from hypertensive clinic run by our hospital. Detail history taking along with the general and systemic examination of each participant was done so as to select them as control and study group subjects.

Inclusion criteria for Control group:

1. Blood pressure, systolic up to 120 mmHg and diastolic up to 80 mmHg.
2. Normal sinus rhythm detected by electrocardiogram (E.C.G.) tracing.
3. Physically healthy individual with absence of any cardiopulmonary symptom.

Inclusion criteria for Study group:

1. Recently diagnosed hypertensive patients by trained and experienced physicians. i.e. history of hypertension less than 6 months.
2. Blood pressure, systolic - 140 to 159 mmHg and diastolic - 90 to 99 mmHg. i.e. Grade I according to Joint National Committee-VI criteria [13]
3. Investigations done in our hospital and showing normal values (Sr. creatinine, Blood urea nitrogen, Blood sugar, Sr. electrolytes etc.) to rule out Essential hypertension.

Materials used:

1. Digital blood pressure monitor (OMRON T-3)
2. E.C.G. machine with its standard limb leads.
3. Cold pressor test apparatus with temperature scanner.

Participants were told to have light breakfast as a test was carried out in morning after making them familiar with the equipments. They were instructed to discontinue the test if they face any discomfort and report immediately. Fortunately all of the hypertensive subjects of our study were on medications other than sympatholytics so instructed to take their medications as per instruction of physician.

Cold pressor test[14]

Resting systolic and diastolic BP of all the subjects was recorded in left arm, sitting position. BP cuff was kept attached to left arm throughout the procedure. When temperature scanner shows the temperature of ice-water as 4-5^{o}C, subjects were asked to immerse their

right hand in ice-water up to wrist for one minute and then remove it. During hand immersion both systolic and diastolic BP were recorded at 30 seconds and 60 seconds intervals on left hand.

Our all subjects performed the test for one minute without much discomfort. Again systolic and diastolic BP were recorded (at one minute interval) till it returns to resting value or at least 5 mm of Hg less than resting systolic BP. The difference between rise in systolic and diastolic BP and resting BP was calculated. This difference was thencompared between control and study group's males and females.

STATISTICAL ANALYSIS:

Data analysis was done by using SPSS version 16.0 (SPSS Inc, Chicago, USA) software. Student'sunpaired t test was applied to compare rise of blood pressure in study groups.The outcome of analysis was presented as a mean (SD). The'p' value of less than 0.05 (*p<0.05) was considered as significant and less than 0.001 (**p<0.001) as highly significant.

RESULTS:

Table No 1 shows the statistical analysis of rise in systolic and diastolic BP in mm of Hg during cold pressor test for male and female, hypertensive and normotensive group subjects.

TABLE 1:Comparison of rise in systolic and diastolic BP in mm of Hg during cold pressor test in males and females

	MALE (n = 20)		**FEMALE (n = 20)**	
	Systolic (Mean ± SD)	**Diastolic (Mean ± SD)**	**Systolic (Mean ± SD)**	**Diastolic (Mean ± SD)**
Hypertensive group (n=40)	18.1 ± 6.88	12.6 ± 7.81	18.5 ± 9.8	11.5 ± 4.7
Normotensive group (n=40)	11.8 ± 1.05	8.4 ± 5.52	12.2 ± 5.79	10.8 ± 3.79

‘ p ’ v a l u e	< 0.001**	< 0.05*	< 0.05*	> 0.05

p < 0.05 – Significant ; p < 0.001 – Highly Significant; p > 0.05 – Non Significant

Study found a highly significant rise in systolic and significant rise in diastolic BP of hypertensive male where as only significant rise in systolic BP of hypertensive females after cold pressor test. Compared to normotensive group in females, the rise of diastolic BP is more but it was not statisticallysignificant. So our study suggest that Grade I essential hypertensive subjects were significantly hyper responsive to rise in systolic BP in both the gender and as far as rise in diastolic BP was concern, only males were significantly hyper responsive to cold pressor test.

Chart No 1 and 2 shows the comparison of mean values for rise in systolic and diastolic BP in mm of Hg during cold pressor test in hypertensive and normotensive group subjects for males and females respectively.

CHART 1: Comparison of rise in systolic and diastolic BP in mm of Hg during cold pressor test in Males

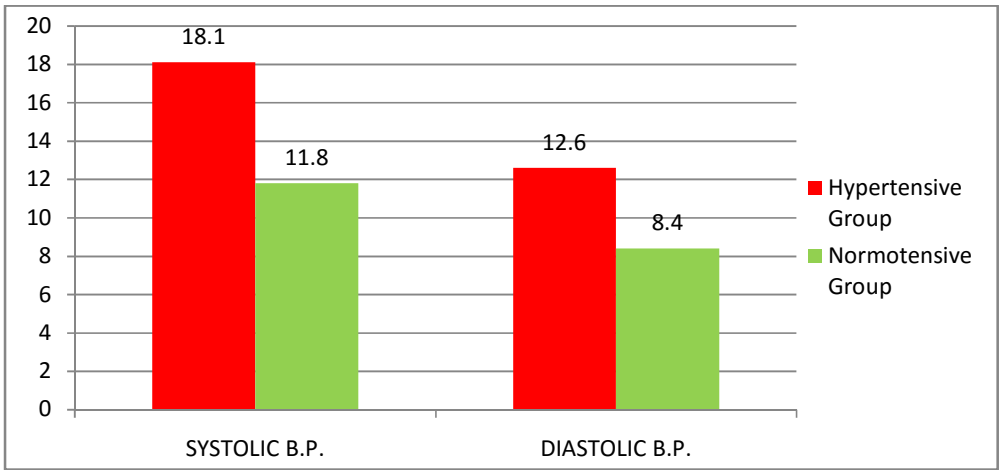
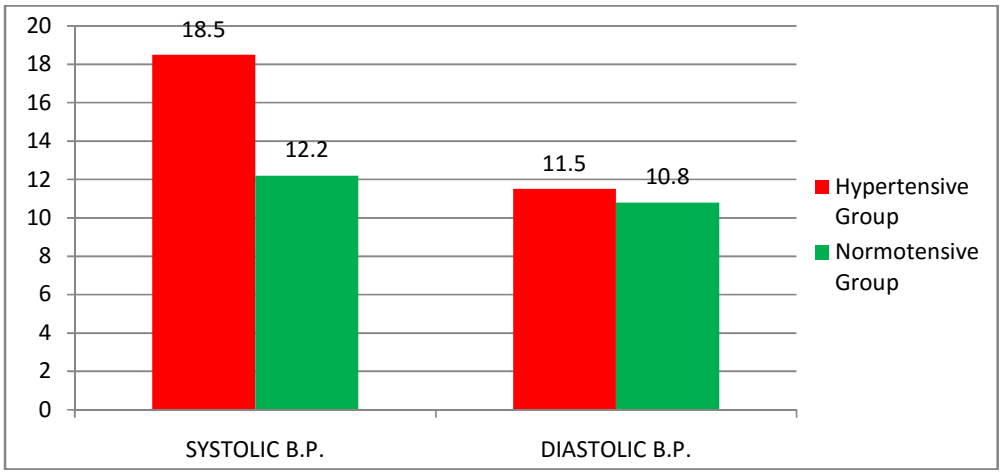


CHART 2: Comparison of rise in systolic and diastolic BP in mm of Hg during cold pressor test in Females



DISCUSSION:-

Present study was undertaken to evaluate role of sympathetic nervous system, a component of ANS during acute circulatory cold stress in Grade–I essential hypertensive patients as compared to normotensive subjects. Our study initiated on hypothesis that sustained high BP in hypertensive patients is basically due to deranged cardiovascular autonomic function which in turn leads to several physiological and biochemical changes, thus creating a vicious cycle of interrelated chain reaction which finally puts seal of "permanency".[15] Sympathetic nervous system an important part of ANS plays acrucial role for the regulation of blood pressure [16, 17]so blood pressure can be used as parameter for assessing functioning of sympathetic nervous system.

Hypertensive patientshave increased basal sympathetic activity and sympathetic hyperactivity in response to mentalstress.[18] Change in BP was also more in hypertensive to various forms of stress compared to normotensive. [12] As far as cold stress is concern, it had been shown that cold air might exert continuous impacts on systolic BP and other cardio vascular diseases risk factors in rats. [19] So there might be relation between various forms of the stresses, sympathetic nervous system and their responses in the hypertensive patients. In present study the form of stress that we have used was cold pressor test (CPT)as this test was found to be useful technique to measure sympathetic function in humans and also useful to define the cardiac and systemic hemodynamic under cold exposure. [20]

In our study there was significantly rise in systolic BP in hypertensive patients of both gender. Whereas diastolic BP rise was statistically significant in male hypertensive over normotensive male group. The pattern of rise of BP was within 30 seconds reaching its peak at around 60 seconds and the basal BP was achieved within two minutes in normotensive subjects, whereas a prolonged pressor response was displayed in hypertensive patients. There was no gender variation in response to test was found.

Research had classified the persons as responders when there was increased in their systolic BP by at least 16 mm of Hg or diastolic BP by at least 12 mm of Hg.[21]In our study hypertensive male group were among the responders. These findings were in keeping with studies of Douglas L and Wood et al. [22] While investigating pathophysiological response to CPT, it had been seen that there was a predominant rise in total peripheral resistance and also higher level of plasma nor epinephrine. [22, 23] Hyper responsiveness may represent one pathogenic mechanism in the development of essential hypertension, be a marker of central defect in the autonomic control of cardiovascular system or reflect early changes in arterial compliance of future hypertensive individuals.[24, 25] Hyperactivity was a manifestation of wide spread basic membrane transport disorder that disturbs cellular cation homeostasis. [26]

One finding of our study was that rise in diastolic BP in hypertensive females was more but not significant.This thought to be unexpected finding isdifficult to explain. But it had been suggested that the physiological “strategy” used to regulate blood pressure in young women was fundamentally different from that in young men [27] and might be the cause of our finding. While our study we have not analyse other factors such as age, body mass index etc. and also the role of parasympathetic system but this information posessome questions for future autonomic function research. Other limitation of the present study was in its design. This was a small group study which was carried out in single institute. Alarger sample size from multiple institutes and a longitudinal study willdefinitely be of a great value in predicting therole of ANS and regulation of blood pressure.

CONCLUSION:-

Present study is based on premise that there is difference in autonomic responses to various forms of stresses in hypertensive and normotensive subjects specifically the sympathetic nervous system response. Based on results of this study, there is significant rise in systolic BP of both the genders after cold stress in first 60 seconds. There is gender difference for rise in diastolic BP as significant rise is seen only in male subjects. After cessation of cold stimuli the recovery of BP towards basal value is also slow in hypertensive patients without gender difference. Causes for these differences are difficult to explain as regulation of BP has multiple components but there is possible role of increased levels of nor epinephrine and peripheral resistance along with hyper responsiveness of cardiovascular system producing the defective sympathetic nervous system response. So our study conclude that there is definite cardiovascular sympathetic and autonomic dysfunctionin grade–I essential hypertensive patients as compared to normotensive subjects so hyper responsive to cold pressor test.

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11

Original article:

COMPARATIVE STUDY OF DIFFERENT DOSES OF CLONIDINE (15µg, 30µg, 45µg) ADJUVANT TO BUPIVACAINE INTRATHECALLY IN LOWER LIMB SURGERIES.

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Source of support: Nil Conflict of interest: Nil

ABSTRACT:

BACKGROUND: Clonidine is added to intrathecal bupivacaine to improve intraoperative analgesia and to increase the duartion of sensory and motor block. **AIMS:** The aim of the study to evaluate and compare the effect of additon of three different doses of clonidine (15 µg, 30 µg and 45 µg) to 12.5mg hyperbaric bupivacaine in patients undergoing lower limb surgeries under spinal anesthesia. **STUDY DESIGN:** Randomized, prospective study was conducted at tertiary academic hospital. **MATERIALS AND METHOD:** 100 patients enrolled in the study were randomly divided into four groups of 25 each. Group-I received bupivacaine, whereas group-II, III and IV received 15µg, 30µg and 45µg clonidine respectively as an adjuvant to 12.5mg bupivacaine. The volume of solution was kept constant 3ml by adding normal saline whenever needed. **RESULT**: Highest level of sensory block, time to achieve this level and highest Bromage scale recorded were comparable among the groups. The regression of sensory block to S2 dermatome and mean duration of motor block were greatest in group IV followed by group III, II and I. There was significant fall in mean arterial pressure (MAP) in group IV as compared to other groups. Significant prolongation of sensory and motor blockade and duration of postoperative analgesia with group-IV as compared to other groups. **CONCLUSION**: Thus, addition of 30µg clonidine gives excellent analgesia with less adrehemodynamic instability and sedation.

KEYWORDS: Adjuvants to spinal anesthesia, intrathecal clonidine, α2 adrenoreceptors.

INTRODUCTION

Spinal anaesthesia was initially performed by Corning in 1885 and first used deliberately by Bier in 1898. Glucose containing solution for spinal anaesthesia was introduced by Barker in 1907.
Since then, hyperbaric solution has been used for spinal anaesthesia. Spinal

anaesthesia and post operative analgesia can be prolonged by using adjuvant to local anaesthetic agents like adrenaline, ketamine, midazolam, neostigmine and opioids.

Clonidine was first tried intrathecally by Gordh in 1983.[6] Clinical studies have suggested that intrathecal clonidine as an adjuvant to bupivacaine prolongs sensory aswell as motor block of spinal anesthesia. It decreases local anesthetic requirements and provides prolonged postoperative analgesia.Other effects of clonidine are antiemesis, reduced post- spinal shivering, anxiolysis, sedation, bradycardia and hypotension.

In this study, we have compared three different doses of clonidine as an adjuvant to intrathecal bupivacaine heavy for spinal anesthesia in patients undergoing lower limb surgeries aiming to find out the lowest possible effective dose among them.

AIMS OF THE STUDY

The present study was designed to study intrathecal 0.5% heavy bupivacaine2.5ml (12.5mg) as a control and with different doses of preservative free clonidine 15, 30and 45micro grams (25 patients in each group) in lower limb surgeries.

- To compare the onset of sensory and motor block.
- To compare the duration of sensory and motor block.
- To assess the duration of post op analgesia.
- To compare perioperative hemodynamic changes.
- To compare the perioperative side-effects and complications.

MATERIAL AND METHODS

Study was conducted on 100 patients of age group between 20-60 years, ASA grade 1 or 2 and posted for lower limb surgeries in th department of V. S. Hospital.

All patients were randomly distributed into four groups of 25 patients each.

Group B: 0.5% heavy bupivacaine 2.5ml (12.5mg) + inj. NS 0.9% 0.5 ml
Group BC15: 0.5% heavy bupivacaine 2.5ml (12.5mg) + clonidine 0.1 ml (15mcg) + inj. NS 0.9% 0.4 ml
Group BC30: 0.5% heavy bupivacaine 2.5ml (12.5mg) + clonidine 0.2 ml (30mcg) + inj. NS 0.9% 0.3 ml
Group BC45: 0.5% heavy bupivacaine 2.5ml (12.5mg) + clonidine 0.3 ml (45mcg) + inj. NS 0.9% 0.2 ml

Detailed preoperative history and physical examination was done on theprevious day of surgery.
Patients having history of allergy to any drug, pregnant patients, patientshaving psychiatric illness or having any contraindication to spinal anaesthesia were excluded from the study.
Patients using any drug that modifies pain perception were excluded from the study.
Procedure explained to the patient and patient was informed to communicate about the perception of any discomfort or pain.
Explained about VAS score.
Written informed consent was taken from the patients and his/her relatives.
All routine pre-operative investigations were done.
Patients were NBM for 6 hours prior to surgery.
Intravenous line taken by 18 gauge intravenous canula and preloaded with10ml/ kg of Ringer's lactate solution before procedure.
Pulse oximeter, non-invasive blood pressure monitoring and ECG were attached and base line reading was taken.
No narcotic or sedative premedication was given to any patient.

Technique:

Under all strict aseptic and antiseptic precaution, with patient in sittingposition, lumbar puncture was performed at L2-L3 inter-vertebral space with 23G Quincke needle and the selected drug was given slowly. After completion of procedure, patient was immediately turned to supine position and time of injection of drug was noted.
Pulse, BP and SpO_2 were recorded at 2, 4, 6, 10, 15, 20, 30, 45 and 60 minutes after giving spinal anaesthesia and then every 30 minutes till 240 minutes and then frequently upto 720 minutes.

Evaluation:

Onset of sensory blockade was noted as loss of pinprick sensation fromsubarachnoid injection. Time to achieve sensory block at T10 dermatome and duration for regression of sensory block to S2 dermatome was noted.
Motor blockade was assessed by modified Bromage scale as used by Breen

Table 1: Modified Bromage score

Score	**Criteria**
1	Complete block (unable to move feet or knee)
2	Almost complete block (able to move feet only)
3	Partial block (just able to move knee)
4	Detectable weakness of hip flexion while supine (full flexion of knees)
5	No detectable weakness of hip flexion while supine
6	Able to perform partial knee bend

Following observations were made:

Onset of motor blockade, time to achieve full motor blockade and time to regression of motor blockade to score 6 was noted.
Patients were assessed for degree of sedation & scoring was done as follows.

Table 3: Campbell Sedation Score (Criteria)

Score	**Criteria**
1	Wide awake
2	Awake and comfortable
3	Drowsy and difficult to arouse
4	Not arousable

After establishment of adequate level of block, surgery was started and time of beginning and duration of surgery was noted.

·No sedative or analgesic medication was used during perioperative period.
·Patients were observed for any intraoperative complications like bradycardia,hypotension, sedation, shivering, nausea, vomiting, dryness of mouth andrespiratory depression and treated accordingly.
·Hypotension was defined as systolic blood pressure >20% decrease in baselinevalue and treated with an intravenous bolus of 6 mg of mephentermine andintravenous fluid.
·Bradycardia was defined as heart rate < 60/mins and treated with 0.6 mg of intravenous atropine.
·Patients were monitored for 12 hours after giving spinal anaesthesia.
·Patients were inquired frequently for the degree of pain they felt with the helpof visual analogue scale (VAS) and the time for the demand for analgesia wasnoted.
VAS involves use of a 10cm line on a piece of white paper and it representspatient's opinion of degree of pain. It was explained to all patientspreoperatively that one end of the line i.e. 'O' marks "no pain" at all, whileother end i.e. '10' represents "worst pain" patient ever felt. Patient was askedto rate the degree of Pain by making a mark on the scale. Thus the pain score was obtained by measuring the distance from the 'O' end to the indicatedmark.

Visual Analog Scale

10	9	8	7	6	5	4	3	2	1	0
Agonizing		Horrible		Uncomfortable			Annoying		None	

Time to first dose of post operative rescue analgesia and total duration ofanalgesia was noted.
·Inj Diclofenac 75mg i.v. was given when patients VAS score reached ≥ 4.

STATISTICAL ANALYSIS

Statistical analysis was done. Data was expressed as mean, mean + SD andpercentage.
Data were compared using Z test. The level of significance used was $p<0.05$.

OBSERVATIONS AND RESULTS

Table 1: Demographic characteristics (Mean + SD)

	Group B	**Group BC15**	**Group BC30**	**Group BC45**
No of patients	25	25	25	25
Age(years)	35+/-8	34+/-9	35+/-8	35+/-12
Male/female	15/10	15/10	13/12	16/9
Asa grade 1	13	14	15	14
2	12	11	10	11

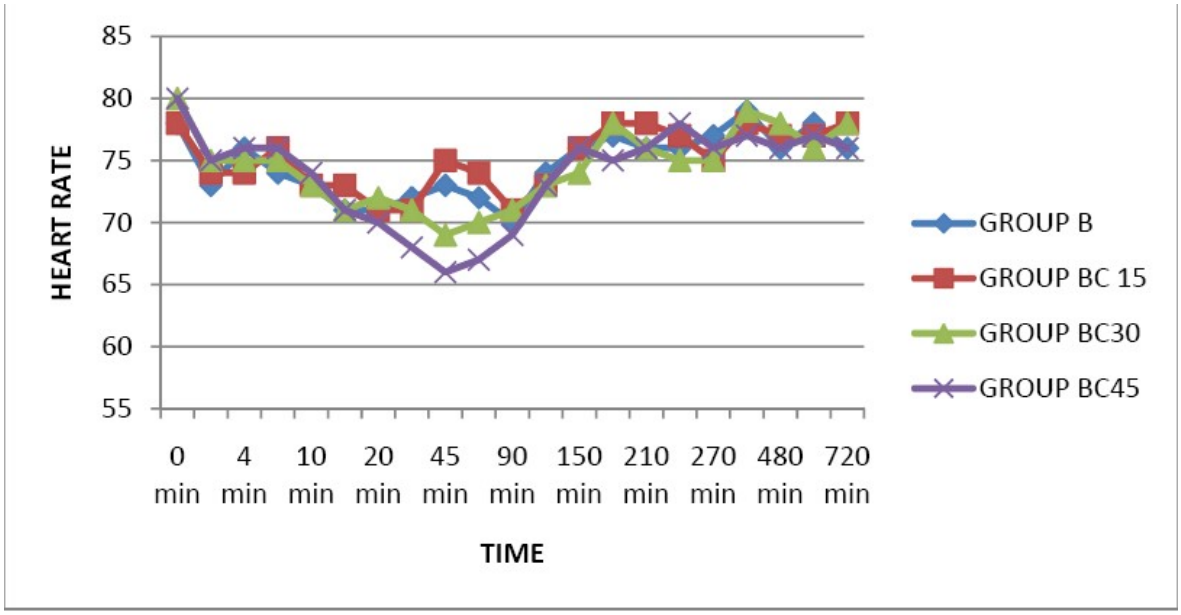
All data in different groups are comparable as $p>0.05$

Table 2: Characteristics of sensory and motor blockade (Mean±SD)

	Group B	Group BC15	Group BC30	Group BC45
Onset of sensory block (Mean ± SD) (min)	1.36±0.14	1.4±0.09	1.36±0.09	1.35±0.12
Time to achieve level of sensory block at T10 dermatome (Mean ± SD) (min)	5.42±0.34	5.44±0.44	5.38±0.39	5.42±0.4
Duration of regression of sensory block to S2 dermatome (Mean ± SD) (min)	120±5.77	133.24±8.18	147.48±9.78	170.3±7.10
Onset of motor block (Mean ± SD) (min)	1.8±0.16	1.80±0.1	1.63 ± 0.08	1.78 ± 0.016
Time to achieve motor block of score 1 (min)	3.7±0.29	3.54±0.45	3.58±0.31	3.6±0.35
Duration of regression of motor block to score 1(Mean ± SD) (min)	136±6.45	153±9.01	173.8±11.48	248.4±30.91

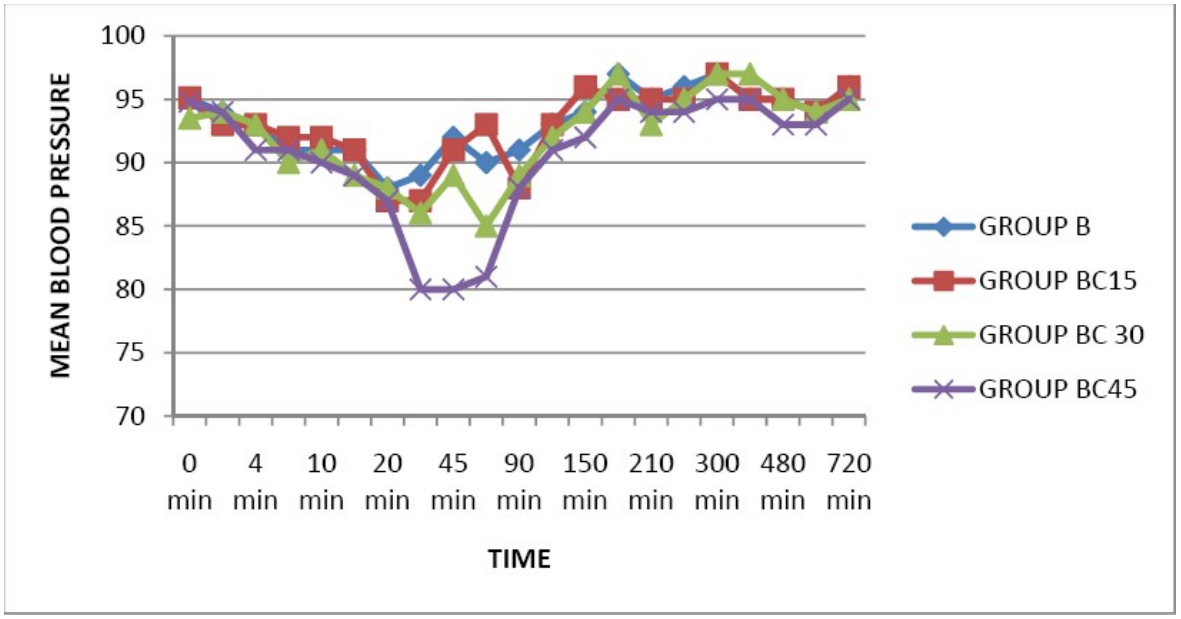
Table 6 compares onset, peak and duration of sensory and motor block. We could notappreciateany dose depen dant variations in onset of sensory, peak sensory and onset ofmotor block($p>0.05$).
There is a statistically significant difference in regression ofsensory as well as motor blockade.
($p<0.05$)

Chart 1: Comparison of peri-operative heart rate versus time



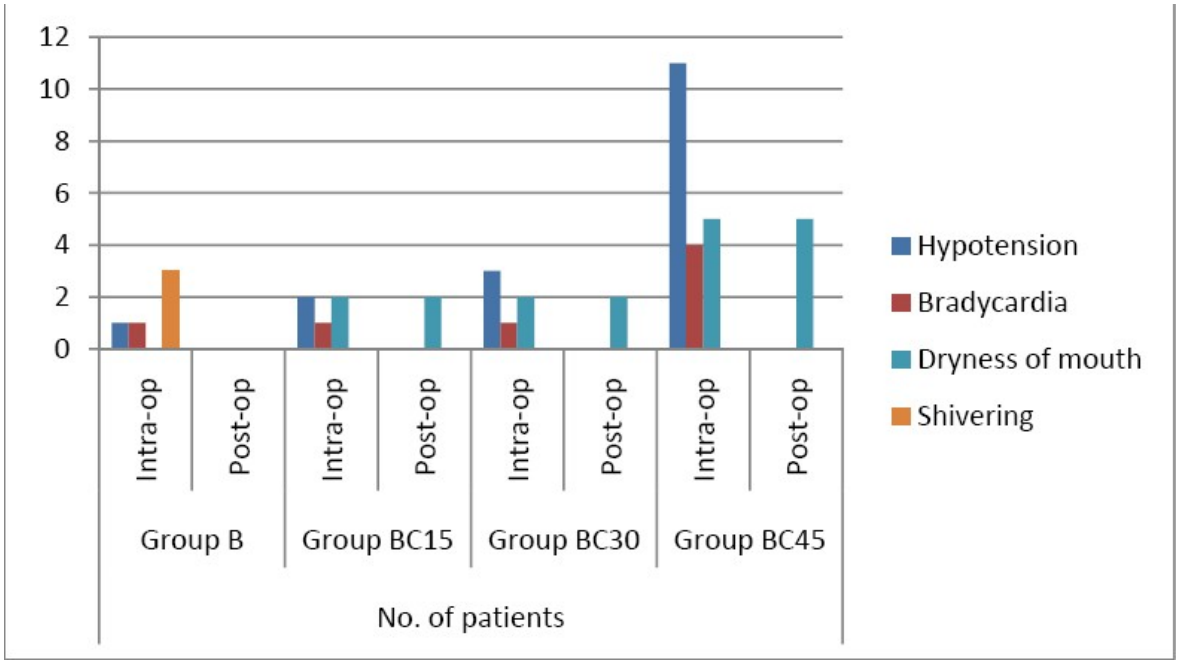
There was statistically significant decrease in heart rate during 30-
60 minutes afterintrathecalinjection in group BC45 as compared to group BC30, group BC15 and groupB($p<0.05$).
But patients in Group BC30 also had bradycardia more than Group BC15 andGroup B.
After 60 minutes heart rate was comparable in all four groups ($p>0.05$).

Chart 4: Comparison of peri-operative mean blood pressure versus Time



Mean blood pressure was decreased after 30-60 minutes in Group B, GroupBC15, Group BC30 and Group BC45 compared to Group B. ($p<0.05$) But patientsin Group BC30 also had fall in MB more than Group BC15 and Group B. Afterthat MBP was comparable in all four groups.

Chart 5: Comparison of peri-operative complications



Hypotension, bradycardia and dryness of mouth were seen more with Group BC45compared to other groups. Shivering was seen with Group B.

Table 3: Sedation score

No. of patients				
Sedation score	GROUP B	GROUP BC15	GROUP BC30	GROUP BC45
1	0	15(60%)	10(40%)	5(20%)
2	0	10(40%)	15(60%)	20(80%)
3	0	0	0	0
4	0	0	0	0

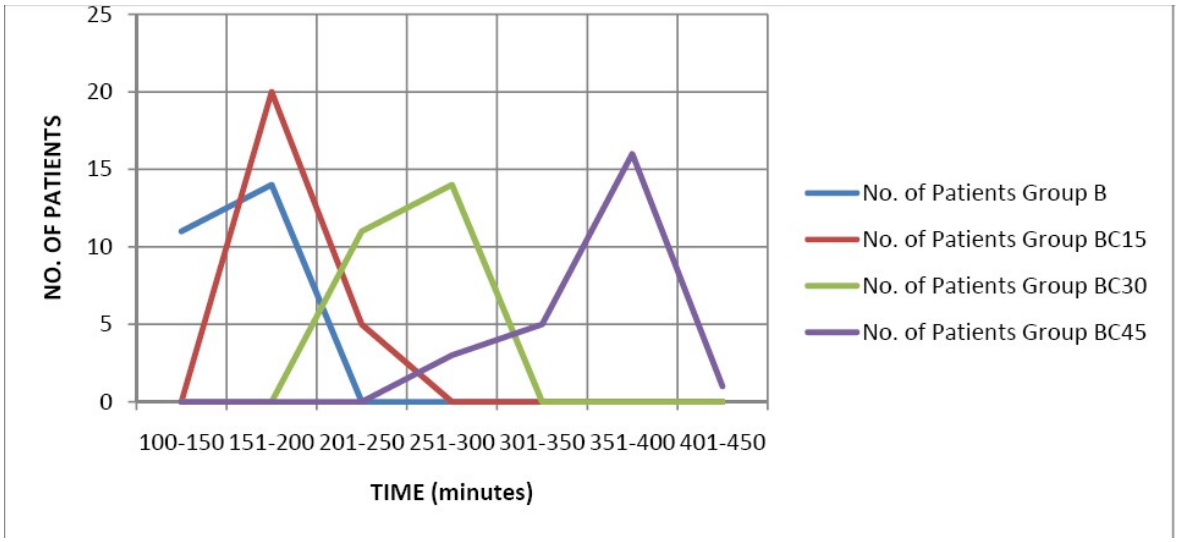
Sedation was seen more in Group BC45 compared to other groups. ($p<0.05$)

Table 4: Total duration of analgesia in minute

Time in minutes	No. of Patients			
	Group B	Group BC15	Group BC30	Group BC45

100-150	11	0	0	0
151-200	14	20	0	0
201-250	0	5	11	0
251-300	0	0	14	3
301-350	0	0	0	5
351-400	0	0	0	16
401-450	0	0	0	1
Minimum time	145	165	210	290
Maximum time	165	210	300	420
Mean time ± SD	154±7.07	188.4±10.97	259.6±23.31	363.2±38.05

Duration of analgesia was prolonged as intrathecal dose of Clonidine was increased.($p<0.05$)



Duration of analgesia

DISCUSSION

Recently instead of only local anaesthetic,adjuvant drugs are added with the objective of prolonging the effect of s ubarachnoidblock with faster onset and improve the quality of analgesia in post operative period.In recent years clonidine, which is a selective partial agonist for alpha 2 adrenoreceptors, have been used to prolong the duration of spinal anaesthesia. Clonidineis known to

increase both sensory and motor block of local anaesthetic..

Gordh et al[6] proved safety of parenteral preparation of clonidine for intrathecaluse in humans.

The primary objective of our study was to find out the effect of different doses ofintrathecal clonidine with hyperbaric bupivacaine for characteristics of sensory block,motor block, post-op analgesia, side effects and complications.
We selected 100 patients of ASA grade 1 & 2 and allocated in four groups.

o**Group B:** 0.5% heavy bupivacaine 2.5ml (12.5mg) + inj. NS 0.9% 0.5 ml
o**Group BC15:** 0.5% heavy bupivacaine 2.5ml (12.5mg) + clonidine 0.1 ml (15 mcg) + inj. NS 0.9% 0.4 ml
o**Group BC30:** 0.5% heavy bupivacaine 2.5ml (12.5mg) + clonidine 0.2 ml (30 mcg) + inj. NS 0.9% 0.3 ml
o**Group BC45:** 0.5% heavy bupivacaine 2.5ml (12.5mg) + clonidine 0.3 ml (45 mcg) + inj. NS 0.9% 0.2 ml

In our study, 100 patients of ASA grade 1 & 2 were selected and allocated in fourgroups. As shown in Table 4 age, sex and ASA grading of the patients were comparable in all four groups. (p>0.05).

Onset of sensory blockade:

Ghodki PS et al,[5] 2010 studied 30 mcg of clonidine intrathecally andconcluded that it has no effect on the onset of sensory and motor blockade.

Bhavini shah,[2] 2011 studied that with addition of clonidine (15 mcg, 30mcg, 60 mcg) to intrathecal bupivacaine did not affect the onset of sensoryblockade.

Bansal Sangeeta et al,[1] 2014 studied that addition of clonidine (45 mcg) tointrathecal bupivacaine had no effect on onset of sensory blockade.
As per Table 6 in our study there was no statistically significant differencefound regarding onset of sensory blockade, as it was 1.4±0.09 mins in GroupBC15 (p>0.05), 1.36±0.09 in Group BC30 (p>0.05) and 1.35±0.12 in GroupBC45 (p>0.05) as compared to 1.36±0.14 in Group B.

Time to achieve sensory level at T10 dermatome:

Thakur et al[15] studied that clonidine from 15 to 30 mcg did not result in anysignificant difference in peak dermatome level.

Van Tuijl et al[16] used clonidine (15 mcg, 30 mcg) with lower dose ofbupivacaine and find the same result as previous.

Bansal Sangeeta et al,[1] 2014 studied that addition of clonidine (45 mcg) tointrathecal bupivacaine had similar effects regarding time for peak sensorylevel.

Grandhe et al[7] used large dose of clonidine (1 mcg/kg) but showed similartrend.
In our study as per Table 6 we found no statistically significant differencein time to achieve sensory block at T10 dermatome, as it was 5.44±0.44 min inGroup BC15(p>0.05), 5.38±0.39 min in Group BC30 (p>0.05) and 5.42±0.4min in Group BC45 (p>0.05) as compared to 5.42±0.34 in Group B.

Duration of regression of sensory blockade to S2 dermatome:

B.S. Sethi et al[13] (2007) noted time for regression of sensory blockade bytwo segments was 150-240 min in clonidine (1 mcg/kg) group, which wassignificantly longer than duration of 90-130 min in control group.

Thakur etal[16] observed that mean time to two segment regression,regression to L3 dermatome, and time to first analgesic request wassignificantly more in clonidine groups (15 mcg, 30 mcg) than in control group,

Bansal Sangeeta et al,[1] 2014 observed that addition of clonidine (45 mcg)to intrathecal bupivacaine significantly increased duration of analgesia inclonidine group.
As shown in Table 6 in our study mean duration of sensory anaesthesia.

- **Onset of motor blockade:**

Ghodki PS et al[5] in 2010 studied 30mcg of clonidine intrathecally andconcluded that it has no effect on the onset of sensory and motor blockade.

Bhavini shah et al,[2] 2011 studied that with addition of clonidine (15 mcg,30 mcg, 60 mcg) to intrathecal bupivacaine did not affect the onset of motorblockade.

Bansal Sangeeta et al,[1] 2014 studied that addition of clonidine (45 mcg) tointrathecal bupivacaine had no effect on onset of motor blockade.
As per Table 6 in our study there was no statistically significant differenceregarding to time of onset of motor blockade as it was 1.80±0.1 in Group BC15($p>0.05$), 1.63±0.08 in Group BC30 ($p>0.05$) and 1.78±0.16 in Group BC45($p>0.05$) as compared to 1.8±0.16 in Group B.

- **Time to achieve motor block of score 1:**

Thakur et al[16] studied that clonidine from 15 to 30 mcg did not result in anysignificant difference for achieving motor block of score 1.

Bansal Sangeeta et al,[1] 2014 studied that addition of clonidine(45 mcg) tointrathecal bupivacaine had no effect to achieve motor blockade of score 1.
As shown in Table 6 in our study we observed that there was no statisticallysignificant Differenceregarding achieving motor block of modified bromagescore 1.

- **Regression of motor blockade:**

B.S. Sethi et al[13] (2007) observed that mean duration of motor block was205 min in clonidine group (1mcg/kg) compared to 161 min in the controlgroup.

Bhavini shah et al,[2] 2011 observed that addition of clonidine (15 mcg,30mcg, 60 mcg) significantyincrease the ti me of motor blockade.

Bansal Sangeeta et al,[1] 2014 studied that intrathecal clonidine (45 mcg)increased the time for regression of motor blockade.

H.saxena[8] et al found the same result after adding clonidine intrathecally.
As shown in Table 6 in our study we observed mean duration of motorblockade of modified bromage score 6 of 153±9.01 in Group BC15 ($p<0.05$),173.8±11.48 in Group BC30 ($p<0.05$) and 248.4±30.91 in Group BC45($p<0.05$) as compared to 136±6.45 in Group B.

- **Peri-operative hemodynamics**

1. **Heart rate:**

Grandhe et al[7] (clonidine 15 mcg, 30 mcg) and B. S. Sethi et al[13](clonidine 1mcg/kg) observed significantally lower heart rate in clonidinegroup compared to control group($p<0.05$).
As shown in Table 7 there was statistically significant decrease in heart rateduring 30-60 minutes after intrathecal injection in group BC45 as compared togroup BC30, group BC15 and group B($p<0.05$). There was no statistically

2. **Blood pressure:**

Thakur et al,[15] and Grandhe et al[7] observed significantfall in MAP in clonidine group
As shown in Table 8,9,10 after intrathecal injection, in all the patients thereis fall in blood pressure upto 30 min which was statistically insignificant in allfour groups ($p>0.05$). It was due to the effect of spinal anaesthesia leading tosympathetic blockade. There was statistically significant decrease in the SBP,DBP and MBP in group BC45 as compared to group BC30, group BC15 andgroup B ($p<0.05$). 1 patient in group B (4%), 2 patients in group BC15 (8%), 3patients in group BC30 (12%) and 11 patients in group BC45 (44%) requiredthe treatment of hypotension.

- **Complications:**

B.S. Sethi et al,[13] 2007 observed fall in MAP and mean heart rate washigher in clonidine (1mcg/kg) group. But he observed no significant increase inother side effects like respiratory depression, nausea, vomiting, anddesaturation in clonidine (1mcg/kg) group.
Dryness of mouth was seen more with Group BC45 (20%) than GroupBC30 (8%), Group BC15 (8%) and Group B (0%).
Other side effects like nausea, vomiting, respiratory depression, shivering,urinary retention were not seen in any patient in Group BC15, Group BC30and Group BC45 in our study.3 patients from Group B had shiveringintraoperatively.

- **Sedation:**

B.S. Sethi et al,[13] 2007 studied intrathecal clonidine and observed that 16out of 30 patients were sleeping comfortably and were easily arousable.
In our study as shown in Table 13 in Group BC15 15(60%) patients werewide awake, 10 (40%) patients were awake and comfortable. In Group BC30,10 (40%) patients were wide awake and 15 (60%) patients were awake andcomfortable. In Group BC45 5 (20%) patients were wide awake and 20 (80%)patients were awake and comfortable.

- **Duration of analgesia:**

Ghodki PS et al,[5] 2010 studied 30mcg of clonidine intrathecally andconcluded that it significantly prolongs the duration of spinal anaesthesia thusextending the analgesia as indicated by delayed demand for rescue analgesia inthe post operative period.

Sunil B. V et al,[14] 2014 observed that duration of analgesia is significantlyhigher in clonidine group (45 mcg) (260.71 ± 38.46) as compared to plainbupivacaine (164.42 ± 24.64)
In our study as per Table 14 mean time to first rescue analgesic wassignificantly higher in Group BC45 (363.2±38.05 min) compared to GroupBC30 (259.6±23.31 min) ($p<0.05$), in Group BC30 compared t o Group BC15(188.4±10.9 min) ($p<0.05$) and in Group BC15 compared to Group B(154±7.07 min) ($p<0.05$)

CONCLUSION

In conclusion, intrathecal addition of 45mcg clonidine to bupivacaine gives longerduration of postoperative analgesia than 30mcg or 15 mcg of clonidine but with moresedation and comparatively less hemodynamic stability. We got fairly good analgesiawith less sedation in 30mcg and l5mcg clonidine. However, duration of analgesia is morewith 30mcg clonidine than 15mcg clonidine. So, addition of 30mcg of clonidine givesexcellent analgesia with negligible hemodynamic instability and sedation is a betterchoice.

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Original article

Adverse Drug Reactions Monitoring in Pentavalent Vaccination Program at a Tertiary Care Teaching Hospital

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Abstract

ABSTRACT Introduction: Four out of ten prescriptions in indoor-patient departments contains gastro-protective drugs. Study aimed to detect classes of gastro protective drugs prescribed with other therapies, to assess trend of co-prescription of gastro-protective with NSAIDs, Anticipated drug interactions with the prescribed gastro-protective and most commonly prescribed gastro-protective group of drug. **Materials and Methods**: It is Prospective, Observational study, approximately 133 prescription analyzed. Written informed consent was taken from the eligible patients included in the study. Drugs data collected by reviewing the prescriptions prescribed. Gastro-protective during study period. Rationality of drug use was assessed by referring to standard textbooks and guidelines.

RESULTS Out of 200 prescriptions, 133 (66.5%) were found prescribing the gastro-protective drugs and more prescribed in the age group of 31-40 (39.84%). Gastro-protective drugs were co-prescribed with different classes of drugs of which NSAIDs (34.83%) were the most common. The Paracetamol (48.10%) were found to be the most commonly prescribed NSAIDs with gastro-protective drugs. The PPIs (66.66%) were found to be the most commonly prescribed gastro-protective. Drug interactions with co-prescribed drugs could be anticipated in 45 cases. **Conclusion**: The usage of gastro-protective is essential in drug therapy; however, over-use can increase adverse effects, drug interactions, and even wrong therapy.

Key words – Vaccine; Pentavalent; Immunization; Adverse events

Introduction

Vaccines are important preventive medicines for primary healthcare, are critical for a nation's health security and play a useful role in public health by reducing morbidity and mortality due to communicable diseases [(1)]. More than 3 million children in developing countries die each year from vaccine preventable diseases such as measles, diphtheria and polio [(2)]. Advantages to combining childhood vaccines include reducing the number of visits, injections and less distress for children, increasing compliance, improved immunization coverage, lower shipping and transport costs, fewer syringes and reduced environmental impact [(3)].

Globally, Hib (Human influenza type b) is the second most common cause of bacterial pneumonia deaths and the third biggest vaccine preventable cause of death in children aged under five, causing eight million serious illnesses and claiming 400,000 deaths each year [(4)].
According to WHO, 2.4 to 3.0 million cases of Hib occur annually in India with about 72,000 total deaths. Hib contributes 40-50% of all meningitis and 25-30% of all pneumonia cases. Hib is the most common cause of

meningitis and second largest common cause of pneumonia. 25-30% of Hib meningitis survivors suffer from long term neurological sequel [5].

Vaccination is an essential component of the public health programs. In view of their demonstrated safety and efficacy, World Health Organization (WHO) recommended in 2006 that Hib vaccines be included in all routine infant immunization programs. After its inclusion in routine childhood vaccination programs in about 180 countries, it practically eliminated Hib disease in many developed countries and reduced incidence in developing countries [5]. Launched in 2001 at Guyana by the Global Alliance for Vaccines and Immunization (GAVI), it took WHO another 10 years to introduce the vaccine in India [6].

Pentavalent vaccine is a combination vaccine which protects against five killer diseases those are Diphtheria, Pertusis, Tetanus, Hepatitis B and Haemophilus influenza type B [7]. Before being introduced in India, the pentavalent vaccine had been used in Bhutan, Sri Lanka and Pakistan. Pentavalent vaccination was found to be highly immunogenic in each of the primary vaccination studies and was also shown to be suitable as a booster with the advantage that it could be given concomitantly with measles vaccine [8].

Vaccines are given prophylactically to healthy individuals, often young children. Vaccines like other pharmaceutical product are not entirely harmless; while most side effects are mild and non-serious. So, expectation to the vaccine safety is much higher than the drugs [9]. Immunization of the paediatric population prevents and protects the population from serious diseases; however administration of vaccines to healthy children also involves risks of adverse events [10].

Public awareness about vaccine safety has increased primarily, because increase in vaccine coverage resulted in an increased number of adverse events which include both true reactions and events concurrent to, but not caused by vaccine. Despite concerns, vaccination is safer than accepting the risk of diseases which these vaccines prevent. Unless a disease has been eradicated (e.g., smallpox), failure to vaccinate increases the risk to both the individual and society [11].

An adverse event following immunization (AEFI) is defined as a medical incident that takes place after an immunization, causes concern, and is believed to be caused by immunization [12]. A strong system for reporting vaccine adverse events (Vaccine Adverse Event Reporting System-VAERS) exists in most developed countries including the US. Although AEFI surveillance in India started along with the UIP in 1985, the AEFI reporting remained suboptimal for long time in the country [13]. There are only a few Indian studies on adverse events of vaccines, especially related to pentavalent vaccine. Therefore this study is done with aim to gather data about any AEFI due to pentavalent vaccination and to detect any increase in known adverse events in children.

Materials and Methods

This was an open label, prospective observational study undertaken in 2017 for 2 months. This study was approved by Institutional Review Board. The children who are reported for routine immunization accompanied by parents/guardians were included in the study. The study was done at Post Partum unit, Obstetrics and Gynecology department at Sheth L. G. General Hospital, Ahmedabad. Children were enrolled in the study after taking written informed consent from parents/guardians. The Proforma contains name of the child or mother name, birth date, gender, address, contact number and number of dose of vaccine. The occurrence of adverse events was noted through a telephone survey after 24, 48, 72 hours of administration of vaccine. The parents or guardians of children were questioned about the appearance of any type of reaction that had followed administration of vaccine.

Results and Discussion

A total 149 children were included in our study. Out of 149 children involved 86 were males and 63 were females. Among 149 children the non-serious suspected adverse events were seen in 81 children. In 48 children no adverse events were reported. We were not able to collect information in 13 cases due to technical reasons. Total 88 adverse events were reported in 81 children. Among 88 observed adverse events, different types of adverse events were observed as shown in the Figure 1.

FIGURE 1: GRAPHICAL REPRESENTATION SHOWING NUMBER OF REACTIONS

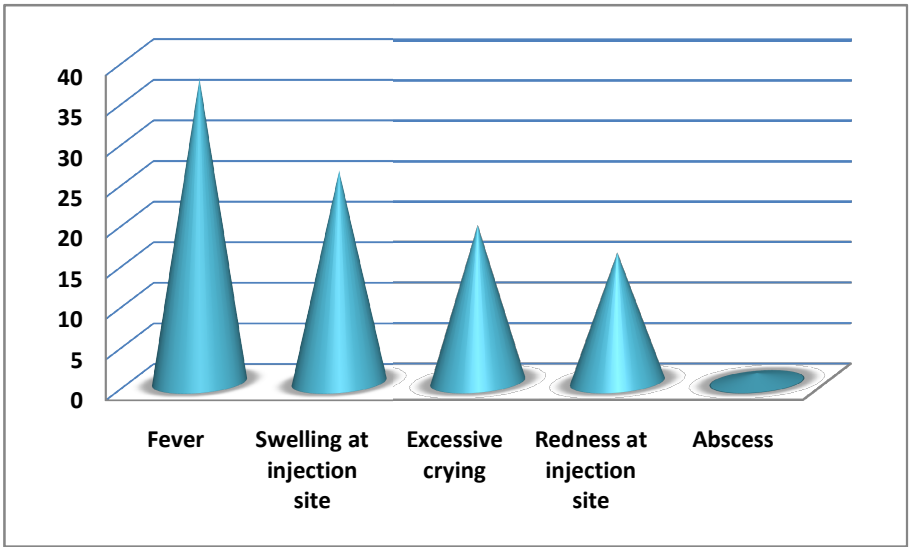


TABLE 1: NUMBER AND TYPES OF AEFI

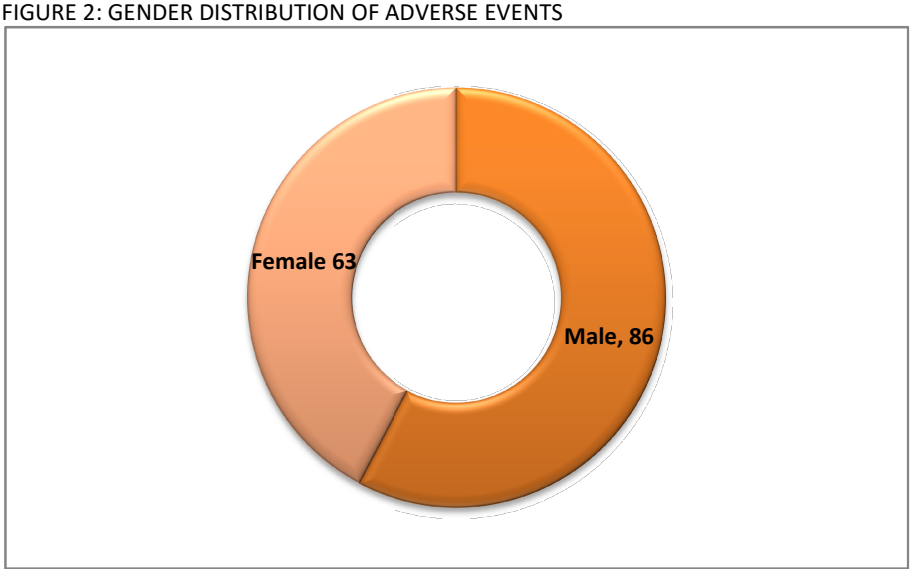
TYPE OF ADVERSE EVENT	NUMBER OF AEFI REPORTED (%)
Fever	33(37.5)
Swelling at injection site	23(26.1)
Excessive crying	17(19.3)
Redness at injection site	14(15.9)
Abscess	1(1.1)
No complaints	48(38.6)
Not reachable	13(9.1)
Total	149

AEFI: Adverse Event Following Immunization

As mentioned in Table 1 most common adverse event observed was fever (37.5%) followed by swelling at injection site (26.1%). As shown in Figure 1 other adverse events reported as excessive crying, redness at injection site and abscess at injection. There were no deaths or serious adverse events due to pentavalent immunization in our study.

Our method of study was active search through telephonic survey including total 149 cases. Similar kind of method was used by study done by Carrasco-Garrido et al in Spain where study period was 6 months and included 946 cases [14]. The study done by Sreelakshmi sreedhar et al in 2014 reported only mild adverse events such as fever, unusual crying, and swelling. No serious adverse events were recorded in it. These finding are comparable to our study [15].

FIGURE 2: GENDER DISTRIBUTION OF ADVERSE EVENTS



There was no significant difference between AEFI in males and females in our study (53% males and 47 % females) as shown in Figure 2. Similar results were found in study done by Vasudev K et al in 2015 [10] and study done by Nisarg J et al in 2012 [9].

Incidence rate of AEFI was calculated as ratio of total number of children suspected to have at least one AEFI to total number of children recruited in study multiplied by 100. Out of 149 children, 74 children had at least one AEFI. Hence incidence calculated as 49.7 % which is very high compared to incidence of AEFI reported in a study by Nisarg J et al to be 20.8 % among 4320 children [9] and by Carrasco-Garrido et al in Spain to be about 19% [14]. But Vasudev K et al found 60% incidence rate in their study (10) which is quite near to our incidence rate [10].

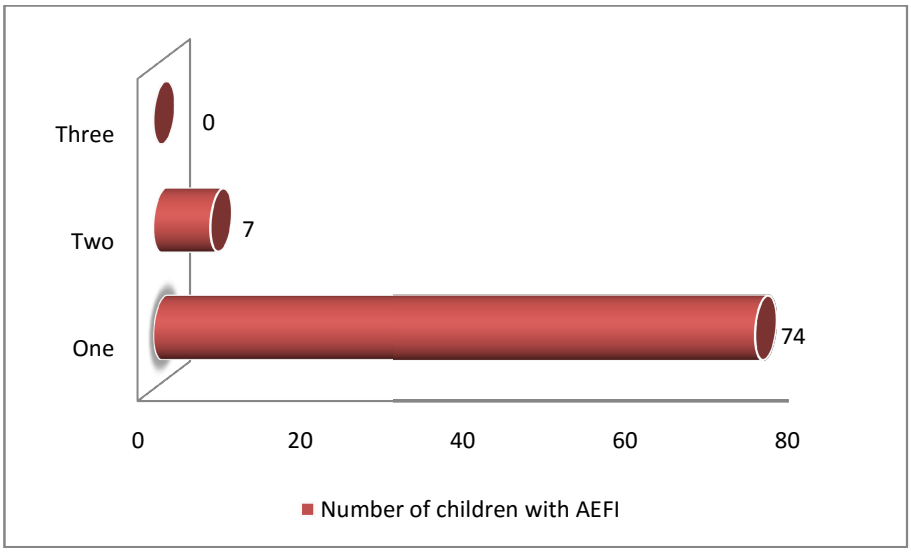
The most common adverse event noted in our study was fever (37.5%) which was also reported by a study by Zhou et al in US (25.8 %) (16). Next common adverse event was swelling at injection site (26.1%). Study done by Carrasco-Garrido et al in Spain (12.2 per 1000 doses) [14] and Mansoor et al in New Zealand (68/1,00,000) reported swelling at the site of injection as the most common AEFI in their studies. However, they included all type of vaccines. We found similar results in a study done by Vasudev K et al where fever (36.8%) was the most common adverse event followed by swelling at injection site (28.1%) [10].

TABLE 2 : DISTRIBUTION OF AEFI OBSERVED AT A TIME (N=88, OBSERVED IN 81 CHILDREN)

Frequency of AEFI at a time	Number of children with AEFI
One	74
Two	7
Three	0
Total	81

There were more than one AEFI noted at a time in many children. As mentioned in Table 2, out of 88 children with AEFI, 74 children developed one AEFI at a time followed by 7 children developed two AEFI at a time.

FIGURE 3: DISTRIBUTION OF AEFI OBSERVED AT A TIME (N=88, OBSERVED IN 81 CHILDREN)



AEFI: Adverse Event Following Immunization

Our study has some drawback like short duration and collection of data by telephonic review. Minor reactions might not be reported by the parents/guardians. The study does not represent population vaccinated outside the tertiary teaching hospital.

Conclusion

All the adverse events in our study were mild and non-serious. An active search system for adverse reactions to vaccines, although mild in nature, could be missed by passive surveillance systems. It might assist to get information about incidence and pattern of AEFI in population. Hence, it should be integral to the management of immunization programs along with different procedures for detecting and assessing adverse reaction to vaccines. However, under reporting and difficulty in finding causal relationship might hinder pharmacovigilance on vaccines. Vaccines might have side effects but none are as severe as diseases themselves. Hence, benefits of immunization significantly prevail over the risks of immunization related adverse events.

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Conflict of interest: None declared

Funding: No funding sources

Ethical approval: The study was approved by Institutional Review Board

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Original article

A COMPARATIVE OBSERVATIONAL STUDY BETWEEN DEXMEDETOMIDINE V/S COMBINATION OF MIDAZOLAM-FENTANYL FOR TYMPANOPLASTY SURGERY UNDER MONITORED ANESTHESIA CARE

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Abstract:

AIMS AND OBJECTIVES: Comparison of efficacy of dexmedetomidine v/s combination of midazolam-fentanyl during monitored anaesthesia care in tympanoplasty with special emphasis on the sedative properties and the effectiveness of sedation, the number of doses of rescue analgesics given and the haemodynamic parameters measured .**MATERIALS AND METHOD:** 60 patients aged between 15-60 years undergoing tympanoplasty under local anaesthesia were divided into Group A patients received intravenous dexmedatomidine in the dose of 1µg/kg over 10 minutes and group B patients received combination of intravenous midazolam 0.02mg/kg and 1µg/kg fentanyl over 10 minutes. Sedation was titrated to Ramsay sedation score (RSS) of three. Vital parameters, intra operative pain intensity by visual analogue scale (VAS) >3, rescue analgesic given if required in the form of fentanyl 1µg/kg was recorded. **RESULTS:** The mean sedation score in group A is 3.18 ± 0.19 and in group B is 3.03 ± 0.21($p>0.05$).Intra operative heart rate and mean arterial pressure in group A were lower than the base line values and the corresponding values in group B ($p<0.05$). Group A patients have less requirement of rescue analgesic as compared to the midazolam-fentanyl group (40%). **CONCLUSION:** Dexmedetomidine and combination of Midazolam fentanyl were comparable in the effectiveness of sedation. The lesser requirement of rescue analgesics and decrease in MAP facilitating improved surgical field makes Dexmedetomidine a better choice due to sedative effect and control over hemodynamics in ENT surgical procedures.

Keywords: Dexmedetomidine, fentanyl, tympanoplasty, monitored anaesthesia care.

INTRODUCTION:

Monitored anaesthesia care involves administering a combination of drugs for hypnotic, analgesic, anxiolytic and amnestic effect. Monitored anaesthesia care provides less physiological disturbance and allow more rapid recovery than general anaesthesia. It involves administration of local anaesthesia in combination with I.V. sedatives, anxiolytic and analgesic drugs. Tympanoplasty is an ENT surgical procedure which involves reconstruction of perforated tympanic membrane with or without ossiculoplasty. Patients may feel discomfort due to pain, noisy suction, manipulation of instruments and head and neck position. Advantages of monitored anaesthesia care (MAC) are less bleeding, cost effectiveness, postoperative analgesia, faster mobilization of the patient and the ability to test hearing intra operatively.

Commonly used medications for MAC are benzodiazepines, opioids and propofol. Midazolam with its quick onset, but a relatively long half- life causes good sedation in combination with opiods like fentanyl.

Dexmedetomidine is a selective α_2 receptor agonist with properties of analgesia, sympatholysis and titrating sedation without major respiratory depression. It reduces opioid requirements and stress response to surgery ensuring a stable hemodynamic state. Dexmedetomidine is increasingly being used as a sedative for MAC for various surgical procedures.

This study compares dexmedetomidine with a combination of midazolam-fentanyl in patients undergoing tympanoplasty under local anesthesia (LA) with primary end point being the patient satisfaction score with stable hemodynamics .The need of intra operative rescue analgesics to maintain a cooperative state of the patient was the secondary end point.

MATERIAL AND METHODS:

This comparative observational study was undertaken after Institutional Review Board approval. The present study was conducted on sixty patients of American Society of Anaesthesiologist grade I and II between 15 – 60 years of either sex scheduled for tympanoplasty . All the patients were examined a day before surgery. They were counseled with regards to sedation, local anesthesia as well as the operative procedure. Data was than collected of these patients for the study.

All sixty patients were divided into two groups with thirty patients in each group. Group A had patients who had received intravenous dexmedatomidine in the dose of 1µg/kg over 10 minutes and group B had patients who had received combination of intravenous midazolam 0.02mg/kg and 1µg/kg fentanyl over 10 minutes. During this period the patients were assessed every two minutes using Ramsay sedation score (RSS (1 = agitated, restless; 2 = cooperative, tranquil; 3 = responds to verbal command while sleeping; 4 = brisk response to gabellar tap or loud voice while sleeping; 5 = sluggish response to gabellar tap or loud voice; 6 = no response to gabellar tap or loud voice). The target end point was a patient having RSS = 3.

Children, mentally unstable patients, uncooperative patients, patients requesting general anesthesia, patients with known sensitivity to local anesthetic drug Lignocaine, allergy to study drugs, pregnant and lactating females were excluded from the study.

On arrival to the operation theatre, baseline vital parameters of the patient were recorded using ECG monitor, pulse oximetry and blood pressure monitoring. An intravenous cannula was inserted and i.v. fluid started. All the patients received injection Glycopyrrolate 0.2mg intravenously as a premedication.

Adverse events like tachy/bradycardia, hyper/ hypotension (deviation of HR, MAP >20% of baseline), bradypnea (RR < 90%), nausea, vomiting, dry mouth or any other event during or within two hours after the procedure were noted. Bradycardia was treated with intravenous Atropine sulphate 0.01mg kg and hypotension with fluid resuscitation. De-saturation was treated by administration of O2 by mask up to 6 liters/min.

After the completion of surgery patients were shifted to the Post Anaesthesia Care Unit and were monitored for hemodynamic parameters, degree of analgesia and adverse events if any for 2 h. RSS was assessed immediately on arrival in the Post Anaesthesia Care Unit and every 30 min thereafter till transfer to surgical ward. Requirement of postoperative analgesia was noted. The first rescue dose of analgesic was given at VAS >3 and was documented. Surgeons were asked to grade the surgical conditions as well as their satisfaction with sedation technique on numerical rating scale (NRS) with zero being least satisfied and 10 being most satisfied. Patients were asked to grade their overall satisfaction with the procedure on a similar numerical scale (NRS 0-10) on postoperative Day one in the surgical ward.

The primary end point of our study was the patient satisfaction score using NRS from 0 to 10. Efficacy of the sedation technique was defined as the ability to complete the surgery without any rescue sedatives and analgesics. Safety of the technique was determined based on the frequency of analgesia/sedation-related intra or postoperative adverse events.

ANALYSIS:

The patient's characteristics and surgical data was compiled and statistically analyzed using SPSS software. Continuous variables were presented as mean+/-SD. Categorial variables were expressed as frequencies.

Analysis of variance (ANOVA) test was used for comparison of continuous variables among the groups. All tests were considered significant if P<0.05.

RESULTS:

Patient Characteristics	Group A (n=30)	Group B (n=30)
Age(year)	37 +/-17	38+/-12
Weight (kg)	55+/-4	58+/-7
Sex Male (n)	18	17
Female (n)	12	13

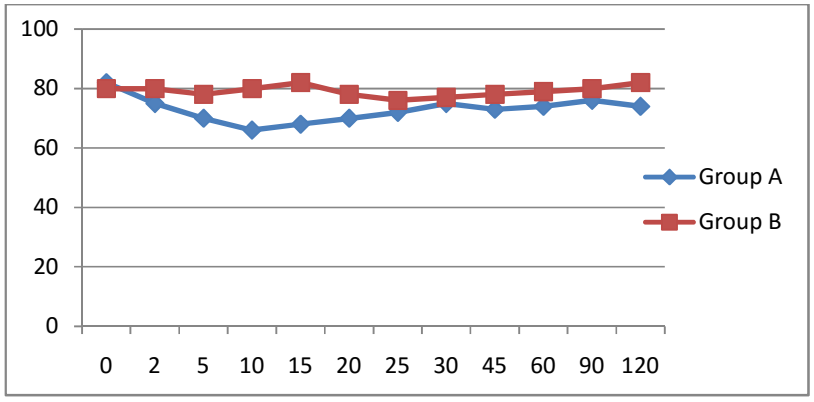

Figure 4 Comparison of intraoperative heart rates

Dexmedatomidine group shows more fall in pulse rate and systolic BP and diastolic BP than Fentanyl and midazolam combination at 30 sec, 60 sec, 90sec, 2min, 3min, 5min which is **statistically significant** at 95% confidence limit(p<0.05).

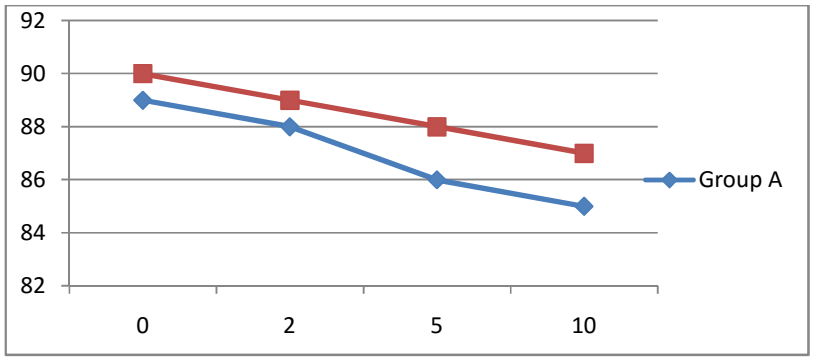

Figure 5 Comparison of intra operative mean arterial blood pressure values

Comparison of MAP at similar time intervals showed no significant difference between the two groups up to the 30th min after loading of the drug, subsequent to which Group A had a lower MAP till the end of surgery ($P < 0.05$).

Group	Pre-op vitals			intra op vitals				Post op vitals	
	Pulse	Mean arterial pressure	Spo2	pulse	Mean arterial pressure	Spo2	pulse	Mean arterial pressure	Spo2
Group A	84.86+/-5	92.2+/-8	99+/-1	75+/-5	88+/-6	98.5+/-0.5	80+/-7	90+/-8	98+/-1
Group B	85+/-4	91+/-8	98+/-2	68+/-5	78+/-6	97+/-3	75+/-5	86+/-8	98+/-1

Sedation Graph:

Score	Group A	Group B
0	0	0
1	2	0
2	20	12
3	8	18

RESULTS:

Dexmedatomidine group shows more fall in pulse rate and systolic BP and diastolic BP than Fentanyl and midazolam combination at 30 sec, 60 sec, 90sec, 2min, 3min, 5min which is **statistically significant** at 95% confidence limit($p<0.05$).

There is no statistical difference found at 0sec.

Dexmedatomidine group shows longer sedation time than Fentanyl and midazolam combination at 30 sec, 60 sec, 90sec, 2min, 3min, 5min but it is **statistically NOT significant** at 95% confidence limit($p>0.05$).

There is no difference found in SpO_2 value between two groups.

Both the groups had patients of either gender and there was no statistical difference found as the P value was >0.05 (non-significant).

Inter-group comparison of MAP at similar time intervals showed no significant difference between the two groups up to the 30th min after loading of the drug, subsequent to which Group A had a lower MAP till the end of surgery ($P < 0.05$).

DISCUSSION:

Dexmedetomidine can be safely and effectively used for procedural sedation and surgeries done under MAC. Its use in other ENT surgeries like functional endoscopic sinus surgery (FESS), septoplasty, and thyroplasty under Monitored Anaesthesia Care has also been documented. Middle-ear surgeries pose a different set of challenges for the patient, surgeons and anesthesiologists. Sympathetic stimulation and movements of an anxious patient cause increased bleeding and disturb the fine microscopic nature of the surgery which may even lead to graft failure. The advantages of local anesthesia include testing hearing intra operatively, immediately detecting complications and a truncated postsurgical emergence. Good patient selection, preoperative counseling and use of appropriate sedation are important factors for success of this surgery under local anaesthesia.

The lower HR and MAP in Group A in comparison to the midazolam-fentanyl group could be explained by the markedly decreased sympathetic activity. Also, intra operatively Group B had more number of patients who complained of pain which was initially treated with infiltration of lignocaine 2% with adrenaline (when VAS <4). Our findings are similar to other studies where lower HR and MAP were observed in the dexmedetomidine group. These results suggest that dexmedetomidine has clinical advantage over midazolam in providing a better operative field for microscopic surgery. Our study demonstrated significantly higher patient and surgeon satisfaction scores with dexmedetomidine suggesting a difference in the quality of sedation of both the drugs.

Both the groups had significant reduction in MAP from their respective baseline values, however on analyzing the magnitude of decrease, patients in Group A had a greater fall (10-15%) in comparison to Group B (5-10%) over a period of time.

One patient in Group A developed hypotension and bradycardia after completing the loading of the drug which was successfully treated with intravenous atropine 0.6 mg and intravenous ephedrine 6mg. No patient in either group had any episode of hypertension. Respiratory rate and SpO_2 were comparable and within normal limits in both the groups ($P > 0.05$). There was no episode of de-saturation in either group.

The lower HR and MAP in these patients could have probably resulted in a better surgical field thus attributing to better surgeon satisfaction. Moreover, surgeons are satisfied if there is no patient movement during surgery. Lesser number of patients (11.1%) receiving dexmedetomidine demanded rescue analgesics as compared to the midazolam-fentanyl group (40%).

CONCLUSION:

Based on RSS, surgeon and patient satisfaction scores; Dexmedetomidine and Midazolam-Fentanyl provided adequate analgesia and sedation in adult patients undergoing middle ear surgery under local anesthesia. Dexmedetomidine is a better alternative sedative then combination of Midazolam-Fentanyl in tympanoplasty as it provides calm sedated patients, stable hemodynamic effect and less bleeding so bloodless surgical field.

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Original article.

COMPARATIVE STUDY OF DEXMEDETOMIDINE OR MGSO4 TO ATTENUATE HEMODYNAMIC STRESS RESPONSE TO LARYNGOSCOPY AND INTUBATION

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ABSTRACT

BACKGROUND: For General anaesthesia, Endo-tracheal intubation is done
Sent from Yahoo Mail on Android usually due to that catecholamine released & deleterious haemodynamic response there . to prevent that alpha agonist dexmedetomidine & NMDA antagonist MgSO4 was used.
AIM: to prevent stress response by both pharmacological agents **MATERIAL & METHODS**:
Both dexmedetomidine 1mcg/kg & MgSO4 30mg/kg 50% were given over 10 min slowly before induction. HR, SBP, DBP were measured at -. After intubation **Results**: both decrease Stress response **CONCLUSION**:
Dexmedetomidine decreases stress response in comparison to MgSO4 as MgSO4 causes mild tachycardia.

Key words : dexmedetomidine , mgso4 ,hemodynamic stress, laryngoscopy, intubation

INTRODUCTION

Endo-tracheal intubation is a safe technique for conduction of general anaesthesia, in that it offers protection to the airway with Endo-tracheal tube cuff and facilitates effective positive pressure ventilation. Stress response under anaesthesia has long been universally recognized phenomenon which may be in the

form of Endo-tracheal or autonomic disturbance. There is increase in heart rate, blood pressure and arrhythmias.[1]

The response to laryngoscopy and intubation can be either laryngovagal or laryngosympathetic. The laryngovagal response is generally seen in paediatric patients in the form of bradycardia, laryngeal spasm and bronchospasm. The most common laryngosymathetic response seen in adolescents and adults is tachycardia and hypertension which can be detrimental in some patients.[1,2]

These changes are maximum at 1 min after intubation and last for 5-10mins. Attempts were made as early as 1960s by various investigations to reduce the sympathetic response to laryngoscopy and intubation. These include

1. Deepening the plane of anaesthesia with inhalation and intravenous anaesthetic agents.[3]
2. Decreasing the duration of laryngoscopy to less than 15 seconds.
3. Usage of drugs like lidocaine, sedatives, vasoactive drugs like sodium nitropruside, calcium channel blockers, nitroglycerine and other drugs especially α_2 agonist like clonidine and dexmedetomidine.[4]

Intravenous dexmedetomidine, a central α_2 agonist is being used in anaesthesia practise as a premedicant. The advantage of dexmedetomidine as a premedicant in anaesthesia setting include sedation, analgesia, anxiolysis and to improve haemodynamic stability.[5]

Magnesium is a naturally occuring clacium antagonist and a non-competitive antagonist of N-methyl D aspartate (NMDA) recepter.[6]

Most studies suggest that perioperative MgSO4 controls cardiovascular response to tracheal intubation[7] reduces anaesthetic requirement[8] and has opoid sparing effect in perioperative period.[9]

The aim of the study is to compare effectiveness of dexmedetomidine 1µg/kg and MgSO4 in attenuating cardiovascular response during laryngoscopy and intubation in ASA I and ASA II patients of AMC MET college, Ahmedabad.

MATERIAL AND METHOD:

The objective of the present study is to determine and compare effectiveness of IV dexmedetomidine 1µg/kg and MgSO4 in attenuating haemodynamic response to laryngoscopy and intubation. The study protocol was approved by the institutional ethical committee and written informed consent was obtained from all the patients.

This was a randomised double blind prospective study with 50 ASA class I and II patients aged 20-60 years of average weight of 40-60 kg of various elective surgeries divided into 2 groups. All the patients were kept nil per oral 10 hrs prior to surgery.

Group I (n-25) will receive 1µg/kg body weight of dexmedetomidine intravenously.

Group II (n-25) will receive 30mg/kg body weight of MgSO4 intravenously.

Inclusion criteria:

- Healthy adult patients aged between 20-60 years posted for elective surgeries.
- Patients belonging to ASA class I and II.

Exclusion criteria:

- Patients of paediatric and geriatric age group.
- Patients belonging to ASA class III and above.
- Patients with difficult airway and obese patients.
- Patients coming for emergency surgeries.
- Pregnant patients.

Anaesthesia technique was standardized for both the groups. On the day of surgery, in the operation theatre intravenous line was secured, pulse oxymeter, NIBP, ECG monitor were applied. Baseline parameters heart rate, systolic BP, diastolic BP were noted before administration of any drugs. Patients pre-oxygenated for 3mins then Group I patients were administrated Inj. Dexmedetomidine 1µg/kg over 10mins and group II patients were received MgSO4 30mg/kg over 1min before intubation.

Patients receive premedication in form of Inj. Glycopyrolate 0.2mg, Inj. Ondansetron 4mg, Inj. Midazolam 1 mg, Inj. Fentanyl 2µg/kg. Patients were induced with Inj thiopentone sodium 5mg/kg followed by Inj succinylcholine 2mg/kg to facilitate intubation. Heart rate, SBP and DBP were noted at 0, 1, 2, 3, 4, 5 after intubation. Anaesthesia was maintained with 02, Nitrous oxidesevoflurane and Inj. Vecuronium. At the end of surgery patients were reversed with Inj. Neostigmine 0.05mg/kg and glycopyrolate 0.01mg/kg.

OBSERVATIONS& RESULTS:-

Demographics: Both groups are comparable in age, sex, ASA grade, duration of surgery.

Changes in Heart Rate:

Table 1: Changes in HR			
HR	GROUP D	GROUP M	P value
Baseline	85.24±20.29	98.45±20.3	0.02
0	96.57±14.22	112.80±16.65	0.0009
1	94.52±16.07	108.25±13.70	0.0028
2	90.67±14.17	104.70±16.24	0.0027
3	88.24±14.66	105.80±13.23	0.001
4	86.43±13.08	104.55±14.21	0.001
5	85.90±11.63	103.00±15.62	0.001

Table 2: Changes in SBP			
SBP	GROUP D	GROUP M	P value
Baseline	135.57±19.45	129.55±18.07	0.16
0	142.95±24.58	149.85±25.90	0.19
1	129.14±22.64	132.55±19.85	0.31
2	118.52±21.82	124.50±18.10	0.17
3	113.00±21.07	119.20±17.75	0.16
4	110.00±17.85	113.65±16.91	0.31
5	112.81±18.59	113.55±13.61	0.44

Table 3: Changes in DBP			
DBP	GROUP D	GROUP M	P value
Baseline	82.38±10.49	83.20±10.14	0.40
0	98.48±18.09	105.10±18.01	0.13
1	89.04±16.91	89.70±10.94	0.45
2	81.33±16.60	83.55±12.39	0.32
3	75.71±15.75	79.05±10.85	0.22
4	75.33±14.16	74.05±12.52	0.38
5	76.10±16.14	75.40±13.65	0.44

Table 4: Rate pressure product changes			
RPP	GROUP D	GROUP M	P value
Baseline	11555.98	12754.19	<0.0001
0	13804.68	16903.08	<0.0001
1	12206.31	13950.88	<0.0001
2	10746.20	13035.15	<0.0001
3	9971.12	12611.36	<0.0001
4	9507.30	11916.20	<0.0001
5	9690.37	11695.65	<0.0001

Discussion

Haemodynamic changes following endo-tracheal intubation are well documented. There are several studies for attenuation of stress response due to laryngoscopy and intubation. Different agents used for the same like IV NTG, esmolol, opioids, vasodilators, calcium channel blockers, IV lignocaine, topical lignocaine and adenoceptor blocking drugs individually or in combination. (1, 2, 3, 4)Deleterious haemodynamic changes due to stress response to intubation include LV dysfunction, HT crisis, pulmonary edema, cardiac arrhythmias, myocardial ischemia, myocardial necrosis.(8, 9,10)

I.V. dexmedetomidine was initially approved by FDA for ICU sedation but due to its unique pharmacological properties it is used for attenuation of stress response. MgSO4 also used for same due to inhibition of catecholamine release from adrenal gland and decrease atrial contraction and vasodilatation due to its calcium antagonist effect.(5, 6)

MgSO4 is highly effective arteriolar vasodilator but with minimum dilatory effect, so maintained cardiac filling and CO.(6,7) Neurophysiological studies demonstrated that MgSO4 is physiopharmacological blocker of N-methyl D-Aspartate(NMDA) receptors in neuronal tissue. Azim Honarmand etal stated that MgSO4 in dose ≤ 50 mg/kg reduces the pressure response to laryngoscopy.(4)

In present study, both D and M group comparable no statistical significant difference with respect to age, weight, gender and type of surgery. Fall in HR was significant at 3, 4, 5 min in group D as compare to group M. Similarly fall in SBP was comparatively more in group D at 3, 4, 5 min than group M. Similarly rate pressure product was less in all baseline, 0, 1, 2, 3, 4, 5 min in group D than group M ($p<0.0001$). So, dexmedetomidine decreases cardiac energy requirements better than MgSO4. Our results correlate with study of Kemiya etal, who found fall in both HR and BP in group D. In Jaakola's study fall was high due to higer dose of dexmedetomidine. We have noticed 18-20% decrease in SBP, 5% decrease in HR in group D which do not require any pharmacological intervention. (12)

Conclusion

In nutshell, we summarise both agents provide better haemodynamics during intubation but detxmedetomidine was more effective than MgSO4 in attenuation of CVS response to MgSO4. Limitation of our study was there is no control group as we want to prevent pressure response in all patients.

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Original article

A STUDY Of INJECTABLE LEVOBUPIVACAINE WITH NJECTABLE TRAMADOL IN SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK"

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Key words: LEVOBUPIVACAINE , TRAMADOL , SUPRACLAVICULAR BRACHIAL PLEXUS BLOCK"

INTRODUCTION:

- Pain is a personal and subjective experience that involves sensory, emotional and behavioral factors associated with actual or potential tissue injury as defined by the International Association for the Study of Pain.[1] . Pain has also been included as the “fifth vital sign” by the Joint Commission on Accreditation of Healthcare Organizations, thereby consideration of the pain in the care of the patients as well as discharge decision,[2] is of utmost importance.
- Anaesthesia for upper limb surgeries can be given by supra clavicular brachial plexus block with use of various local anaesthetic agents with adjuvant.
- These nerve blocks can be given by various methods such as conventional methods by anatomical landmark with use of peripheral nerve block or by using USG machine.
- As LEVOBUPIVACAINE is a local anaesthetic drug belonging to the amino amide group.it is the s-enantiomer of bupivacaine [(s)- 1 butyl-N-(2,6 – dimethylphenyl-piperidine-2-carboxamide].[18]
- Compared to bupivacaine , levobupivacaine demonstrated less affinity and strength of depressant effects into myocardial and central nervous vital centres in pharmacodynamic studies. And it has longer onset and duration time of motor block.[17]
- Tramadol, a 4 phenyl-piperidine analog of codeine has been found to have a unique mechanism of action that suggests its efficacy as an adjunct to local anesthetics in brachial plexus block.[10][11]

MATERIAL AND METHODOLOGY :

- After approval by Institutional Ethical Committee, this study

was carried out on 104 American Society of Anesthesiologists

(ASA) I/II patients of either gender, in the age group of 20-60

years over a period of 6 month, having fractures of forearm bones

for open reduction and internal fixation under supraclavicular

brachial plexus block.

- Patient’s refusal for block, having bleeding disorders, getting

opioid analgesics or monoamine oxidase inhibitors prior to

surgery, local infections at the site where needle for block is to

be inserted, history of seizures, respiratory or cardiac diseases,

pregnancy were the exclusion criteria. Patients in whom the

block effect was partial and required supplementary anaesthesia

also were excluded.

- Randomization was achieved by computer generated random

number table. Random group assigned was enclosed in a

sealed opaque envelope to ensure concealment of allocation

sequence. After shifting the patient inside operation theatre,

sealed envelope was opened by anaesthesiologist not involved in

the study to prepare the drug solution for infusion According to

randomization. The observer who collected the intra-operative

data as well as the operating surgeon were blinded to the drug

solution administered.

- Observation type of study for 60 pts who is posted for upper limb surgery under supraclavicular brachial plexus block at this tertiery care centre.

- Randomly divided in to 2 groups:
- GROUP B – 30 pts
- GROUP M _ 30 pts.

- After routine pre-op profile & other investigation sos, will give routine pre medication in form of
- Inj.ondensetron 4mg(iv)
- Inj.glycopyrolate 0.04mg/kg(iv)
- Inj.midazolam 0.2mg/kg(iv).

- On arrival to the operation theatre, standard monitoring was established with starting of peripheral intravenous (I.V.) line by 18G cannula in the contralateral hand and ringer lactate infusion was started. After proper positioning of the patient and under all aseptic precautions supraclavicular brachial plexus block was performed by blinded anesthesiologist using subclavian artery as a guide, till paresthesia elicited or sensation of piercing the sheath felt.

- In GROUP B – 30 ml (0.5%) inj. Levobupivacaine + inj. Tramadol (1.5mg/kg)2ml In supra clavicular block.
- In GROUP M _ 30 ml(0.5%) inj. Levobupivacaine + inj. NS (2ml) in supraclavicular block +inj. Tramadol (1.5mg/kg)IM in supragluteal region.

- All above procedures are done with help of PNS machine or portable USG machine guided.

- Intra operative all anaesthetic monitoring care taken and observed for onset time, density (grade) , duration of block, & post operative analgesic requirement by VAS score.

- Routine monitoring of all the patients including blood pressure, pulse rate, SpO2, electrocardiogram was done.
- We evaluated onset, quality and duration of sensory and motor block. For sensory loss assessment, we used pin prick test with a three-point scale-0- no block, 1-analgesia (loss of sensation to pinprick), 2-loss of touch.
- Motor block was assessed by modified Bromage scale[10] for upper extremities using a 3 point scale. 0-total movement of fingers and wrist, 1-decreased motor strength with ability to move the fingers only, 2-inability to move fingers.

- Block was evaluated every 5 min till complete motor and

  sensory block after the injection of local anaesthetic. Further

  block assessment was done at hourly intervals up to 24 h by

  a blinded anaesthesiologist.

- Onset of sensory blockade was defined as the interval between the end of injection and sensory blockade and was demonstrated as loss of sensation to pinprick or by score 1 of pinprick response.
- Onset of motor blockade was the interval between the end of injection and complete motor paralysis of wrist and hand. The duration of sensory blockade being the time interval between sensory blockade and reappearance of pinprick response.
- The duration of motor blockade was defined as the time interval between maximum motor blockade and complete movement of wrist and fingers. Duration of analgesia was taken as the time interval between onset of sensory blockade and the first dose of rescue analgesic given to the patient.

OBJECTIVE AND RATIONALE

- To study the addition of inj. Tramadol (1.5mg /kg) as adjuvant with inj. Levobupivacaine 0.5% (30ml) in supra clavicular brachial plexus ,in form of

1) Onset Time for sensory and motor blockade

2) Duration time for sensory and motor blockade

3) Density of sensory and motor blockade &

4) evaluation of perineural inj. Tramadol on peripheral nerve tissue block.

INCLUSION & EXCLSION CRITERIA FOR ENTRY OF PARTICIPANTS :

- INCLUSION CRITERIA : ASA -1, ASA- 2, ASA -3, AGE GROUP 20 YRS TO 60 YRS.
- EXCLUSION CRITERIA : ASA -4 ,contraindicated to regional anaesthesia ,contraindicated to psychiatric pts , AGE GROUP <20 YRS & >60 YRS.

STATISTICAL RESULTS :

The data was analyzed by package SPSS 15.0 (SPSS Inc. Chicago, IL, USA). Demographic and hemodynamic data were analyzed by **Student's t-test.** For statistical analysis of onset time and duration of sensory and motor blocks, duration of analgesia, **unpaired t-test** was applied. $P < 0.05$ was considered as statistically significant. For intra-group analysis, a repeated measure **ANOVA** was performed .

TABLE : 1 : **DEMOGRAPHIC PROFILE :**

Parameters	**Groups (mean ±SD)**	
	Group B (n = 30)	**Group M (n = 30)**
Age (years)	35.50 ±1.233	35.33 ±1.25
Weight (kg)	54.03 ±8.134	54.46 ±7.74
Mean duration of surgery (min)	624.33 ±32.89	619.33 ±36.09

P <0.05 = significant , SD = standard deviation .

TABLE : 2 : COMPARISION OF MEAN DURATION OF ONSET OF SENSORY BLOCK IN 2 DIFF. GROUPS.

Study group	Mean duration of onset of sensory block(min) Mean±SD	P value
Group B	20.66±4.39	0.006
Group M	17.10±5.33	

TABLE :3: COMPARISION OF MEAN DURATION OF ONSET OF MOTOR BLOCK IN 2 DIFF. GROUPS.

Study group	Mean duration of onset of motor block(min) Mean±SD	P value
Group B	12.53±4.49	0.007
Group M	12.86±5.08	

Total number of patients enrolled during study period were 75, being 4O , 35 in groups B , M respectively. The number of patients who had partial blocks or failed blocks was 10 in Group A, 5 in Group B. After excluding

these patients, the total number of patients taken for study was 30 in each group. The TWO groups were comparable to each other with respect to age, gender, weight and duration of surgery [Table 1].

It was found that onset of sensory block was faster in Group M (17.10±5.33) than Group B (20.66±4.39) (P = 0.06) [Table 2]. But The onset of motor block was faster in Group B (12.53±4.49) than Group M (12.86±5.08) (p = 0.007) [Table 3].

Acc.to our study , we found that duration of sensory and motor block was longer in Group B(perineurally) than in Group M (intramuscular).

DISCUSSION :

- Our study demonstrates that the mixture of tramadol and Levobupivacaine injected perineurally for supraclavicular brachial plexus block hastens the onset of sensory block, motor block and provides a longer duration of motor blockade and decreases the operative or post operative analgesic requirement compared to when tramadol given by intramuscular with levobupivacaine alone in block.

- Demonstrated that the addition of 100 mg of tramadol to levobupivacaine for axillary brachial plexus block prolongs sensory and motor block as compared to levobupivacaine given alone.
- Consequently, the results of that study suggest that tramadol has a specific analgesic effect on peripheral nerves. Their findings were same as that of our study, but there was no significant difference in the onset of sensory and motor block among both groups in their study.[10]

- This finding of hastening the onset of sensory and motor block in tramadol perineural group may be contributed by a change in pH of the drug solution with addition of tramadol in our study.
- Observed that tramadol used as an adjuvant to levobupivacaine for single-shot interscalene or supraclavicular block, given either perineurally or intramuscularly provides a longer duration of postoperative analgesia when compared to interscalene block performed with 0.5% levobupivacaine alone in patients who underwent arthroscopic repair of rotator cuff tear.[11]

- The results of our study were entirely different from study by who observed that the addition of 100 mg of tramadol to 3.75 mg/ml of ropivacaine does not have any beneficial effect on the nerve block characteristics of axillary brachial plexus anaesthesia for arteriovenous fistula surgery in uremic patients.[12]
- In our study, only one patient in tramadol I.M group had nausea and was managed symptomatically.
- To summarize, our data support specific analgesic action of tramadol on peripheral nerves. This study is one in which tramadol has been given PERINEURAL as well as INTRAMUSCULAR as an adjunct to levobupivacaine in supraclavicular brachial plexus block.

CONCLUSION :

- The use of tramadol as an adjunct to levo-bupivacaine in supraclavicular brachial plexus block, hastens the onset of block, increases the duration of motor blockade. It also delays the requirement of the first dose of analgesic postoperatively without causing any side effects in comparison to systemically administered tramadol group.

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Original article:

ROLE OF FINE NEEDLE ASPIRATION CYTOLOGY IN DIAGNOSIS OF SOLITARY THYROID NODULE.

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Key words: solitary thyroid nodule (STN), fine needle aspiration cytology (FNAC), histopathology examination (HPE)

ABSTRACT

Introduction: Solitary thyroid nodule is a common clinical entity encountered in routine clinical practice. Excising all thyroid lesions is impracticable and associated with risk [1, 2]. A routine use of FNAC in assessment of thyroid lesion has reduced number of patients subjected to thyroidectomy for benign lesion**.Objective:** Present study was undertaken to know distribution of lesion according to age and sex and also to evaluate efficacy of FNAC in diagnosis of clinically obvious and palpable solitary thyroid nodule. **Material and methodology :**This study include 25 cases, for the purpose of inclusion in this study a STN defined as a single swelling involving either lobe of thyroid or isthmus of thyroid gland. **Result: from** 25 cases of FNAC's of thyroid lesion maximum cases were benign 21 (84%) malignant cases were 2(8%) and 2 cases was suspicious (8%).**Conclusion:** With 92% accuracy rate and is a single best investigation for preoperative evaluation for STN to differentiate between benign and malignant nodules.

ABSTRACT

(1)Introduction: Solitary thyroid nodule is a common clinical entity encountered in routine clinical practice. Excising all thyroid lesions is impracticable and associated with risk[i,ii] [1, 2]. A routine use of FNAC in assessment of thyroid lesion has reduced number of patients subjected to thyroidectomy for benign lesion. (2) Objective: Present study was undertaken to know distribution of lesion according to age and sex and also to evaluate efficacy of FNAC in diagnosis of clinically obvious and

palpable solitary thyroid nodule. (3) material and methodology :This study include 25 cases, for the purpose of inclusion in this study a STN defined as a single swelling involving either lobe of thyroid or isthmus of thyroid gland. (4) Result: from 25 cases of FNAC's of thyroid lesion maximum cases were benign 21 (84%) malignant cases were 2(8%) and 2 cases was suspicious (8%). (5) Conclusion: With 92% accuracy rate and is a single best investigation for preoperative evaluation for STN to differentiate between benign and malignant nodules.

Key words: solitary thyroid nodule (STN), fine needle aspiration cytology (FNAC), histopathology examination (HPE)

Introduction

Thyroid lesions are very frequent with number of studies shows annual incident rate of 4-8%[iii][3].excising all the thyroid lesions is impracticable and associated with risk[1,2].it is very vital to make a pre operative assessment of morphological nature of lesion[iv][4]. Thyroid gland is superficial and easily accessible position and ideal tissue for FNAC[v] [5].Fine needle aspiration cytology is well established, non invasive and safe procedure to differentiate between benign and malignant thyroid swelling [vi][6].routine use of FNAC in the assessment of thyroid lesions quiet reliable in well experienced hand and has reduced the number of patient subjected to thyroidectomy for benign lesion. Purpose of our study is to know distribution of lesion in population according to age and sex and to evaluate the efficacy of FNAC in the diagnosis of clinically obvious and palpable thyroid lesions.

Materials and methods

The present study consists of study of 25 cases of thyroid nodules. For the purpose of inclusion in this study a STN is defined as a single swelling involving either lobes of thyroid or isthmus of thyroid gland. A relevant clinical profile of respected cases was taken from the case record. All patients were submitted to FNAC and ultrasonography. The result of FNAC was interpreted as benign, malignant and inadequate aspiration. Sonographycaly nodule evaluate for size, location, consistency in order to differentiate between benign and malignant lesion. All patients were subjected to surgery and histopathology examination was obtained.

Result

A total 25 pt of thyroid nodule were diagnosed and treated in our hospital. In all cases pre operative FNAC was done and diagnosis was recorded. In our study solitary thyroid nodule prevalent in all age groups, the youngest pt was of 19 years and oldest was 70 years old. Most of cases reported in 3rd and 4th decade (64%). In present study 22 out of 25 (88%) were female. In study 1 out of 3 nodule in male were malignant (33.4%) and 4 out of 22 nodules in female were malignant (18.2%).In present study on FNAC findings 21 out of 25 was benign while 2 was malignant and 2 has suspicious findings. The cytological diagnosis of benign nodule is conformed in 19(90.4%) out of 21 patient and was disputed in 2 (9.6%) which was shown too malignant. All 2 malignant aspirations on cytology were confirmed by HPE, 2 suspicious cases HPE revealed one malignant lesion and one benign lesion.

Table -1 correlation of FNAC with histopathology diagnosis in thyroid carcinoma

Histopathology diagnosis	number	FNAC diagnosis	number
Papillary carcinoma	4	Papillary carcinoma	2
		benign	2
		suspicious	0
Follicular carcinoma	1	Suspicious	1

Of 4 case of papillary carcinoma of thyroid FNAC revealed papillary carcinoma in 2 cases (40%), and benign in 2 cases. Histopathology of suspicious lesion in FNAC shows one case of follicular carcinoma and one for benign lesion (table-1).

Table- 2 Benign lesions diagnosed by FNAC and their comparison with HPE

FNAC report	No of patient	HPE report	No of patient	Remark
Benign (colloid goiter and benign cystic lesion)	21	Benign	19	True negative
		malignant	2	False negative

Table-3 Malignant and suspicious lesion diagnosed by FNAC and comparison with histopathologic examination

FNAC report	Number of patient	HPE report	Number of patient	remark
Malignancy	2	Malignancy	2	True positive
		benign	0	False positive
suspicious	2	Malignancy	1	True positive
		benign	1	False positive

Table - 4 Statistical analyses for carcinomatous lesion

Histopathologic Examination FNAC	Malignant	Benign
Malignant + suspicious	3	1
Benign	2	19

Discussion

Thyroid nodule which occur spontaneously in 4.7% of adult population[vii] [7]. Incidence of thyroid cancer in nodules varies from approximately 0.1% in general population to 20 % in surgically biopsied nodule[viii] [ix][8, 9]. In our study overall incidence of malignancy in solitary thyroid nodule was 20 % which is slightly higher than other study but comparable with Hoffman [x][10] (1972) .FNAC is a corner stone of the laboratory evaluation of STN. FNAC is a cost effective and recommended as the 1st choice for evaluation of thyroid lesion.[xi] . In our study maximum number of pt is between 3rd and 4th decade (64 %) which is comparable to M M kapur study[xii] [12]. in our study 88% of lesion found in female from which 5 out of 22 was found malignant while in male 1 out of 3 found malignant. This leads to conclusion that STN found more common in female but male should be viewed with great suspicious. In review of thyroid nodule it was reported to have sensitivity of 65-98% and a specificity of 72-100% [6]. After comparison of our result of FNAC with histopathology, overall sensitivity of FNAC was 70% and specificity was 95.2%.the overall accuracy rate was 96%. In our study, we reported two cases as false negative that translated to 4% false negative rate, while we reported one case as false positive with 4% false positive rate which agreed with other study that range 0-8%.this shows that FNAC is more specific than sensitive in detecting thyroid malignancy, and therefore it is used as a reliable diagnostic test. 6].

Conclusion

FNAC is considered the gold standard diagnostic test for diagnosis of thyroid nodules with good accuracy, sensitivity and specificity.FNAC in thyroid lesion as a safe, cost effective, OPD procedure with minimal complication. FNAC provide useful information and may be used along with other clinical information to decide best form of treatment for solitary thyroid nodule.FNAC diagnosis of malignancy is highly significant. The routine use of of FNAC for STN reduced unnecessary surgery and lead to proper planning of surgery in malignant cases.

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Original article

ROLE OF FENTANYL IN ATTENUATION OF HAEMODYNAMIC CHANGES DURING ELECTROCONVULSIVE THERAPY

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Key words: FENTANYL, HAEMODYNAMICS ,ELECTROCONVULSIVE THERAPY

Abstract

BACKGROUND AND AIMS :
The use of Electroconvulsive therapy as a treatment modality has increased over the recent years. Electroconvulsive therapy (ECT) is associated with transient episodes of hypertension and tachycardia.Various agents like Beta-blocking agents, Opioids, Nitroglycerine and Clonidine are used to prevent cardiovascular response. Aim of our study was to assess the efficacy of Fentanyl on cardiovascular response and seizure duration during ECT. MATERIAL

AND METHOD : 60 patients aged 18-60 years with ASA Grade I or II undergoing ECT were divided into Group A patients who received Inj.Fentanyl 1 mcg/kg intravenously and Group B patients who did not received Inj. Fentanyl 1 mcg/kg. The haemodynamic changes and seizure duration were recorded and tested by Mean, Standard deviation, Percentage, P value for significance. RESULTS : The haemodynamic changes after giving ECT were less in Fentanyl Group A ($P<0.05$) as compared to Nonfentanyl Group B and vitals came to baseline value earlier in Fentanyl group than Nonfentanyl group. Seizure duration was not affected by Fentanyl ($P>0.05$). CONCLUSION : Those patients receiving ECT when given Inj. Fentanyl 1 mcg/kg intravenously were seen to be more haemodynamicaly stable as compared to those patients who did not received Inj.Fentanyl intravenously.

KEYWORDS :

Electroconvulsive therapy (ECT), cardiovascular response, seizure duration, Fentanyl

INTRODUCTION

Electroconvulsive therapy (ECT) is a widely used and effective treatment for severe depression, schizophrenia, bipolar mood disorder, especially when alternative methods of treatment have failed. [2,5] ECT is a simple procedure, when appropriately administered. It is a safe and effective procedure in a wide variety of high-risk patients. However, ECT is accompanied by a cardiovascular response that can be dangerous in patients with cardiovascular disease. This response consists of an initial parasympathetic and a subsequent sympathetic reaction.[1,2,4,6,7] The essential elements of anesthesia for ECT include rapid loss of consciousness, effective attenuation of the hyperdynamic response to the electrical stimulus, avoidance of gross movements, minimal interference with seizure activity and prompt recovery of spontaneous ventilation and consciousness.[2,4] Fentanyl can be used as premedication to reduce haemodynamic response during ECT.[2,3,5,6,8] When it is used, there is transient increase in Heart rate and Blood pressure but it comes to preoperative status soon.

MATERIAL AND METHOD

This Comparative observational study was undertaken after Institutional Review Board approval.The present study was conducted on 60 patients of American society of Anesthesiologist Grade I or II, between 18-60 years of either sex posted for ECT.

The indications for ECT were Depression, Schizophrenia, Bipolar mood disorder etc. The patients with ASA grade III & above, like uncontrolled Hypertension, Diabetis mellitus, Thyroid dysfunction, Increased Intracranial pressure, Recent history of Ischemic heart disease, Pheochromocytoma, Retinal detachment or Glaucoma were excluded from the study.

All sixty patients were divided into two groups with thirty patients in each group. Group A patients who had received Inj.Fentanyl 1mcg/kg intravenously & Group B patient who did not received Inj.Fentanyl 1 mcg/kg.

In all patients, proper preoperative assessment was done. Routine investigations were done. Patients were asked to be Nil by mouth and a written informed consent of patient and relative was taken. All equipments for cardio-pulmonary resuscitation were kept ready.

After arrival to the Operation Theatre, baseline vital parameters of the patients were recorded using ECG monitor, Pulse oximetry and Blood pressure monitoring. An intravenous canula was inserted. Patients were premedicated with Inj. Glycopyrrolate 0.04 mg/kg and Inj. Fentanyl 1 mcg/kg intravenously. Patients were induced with Inj.Thiopentone sodium 3-4 mg/kg and Inj.succinylcholine 0.5-1 mg/kg intravenously. Ventilation was assisted with a face mask with a magill's circuit. Patients were pre-oxygenated with 100% Oxygen. Bite block was kept before application of the electrical stimulus to prevent injury in oral cavity, teeth , gum bleeding and laceration of tongue. Patients were held tight for immobilization to prevent fracture, joint dislocation and other complications. Then ECT was given.

During ECT noninvasive monitors were used to record Heart rate, Blood pressure, Oxygen saturation. Seizure duration was also noted. Patients were given 100% Oxygen after convulsion. During procedure awareness was assessed by PRST (Pressure, Rate, Sweating, Tear) score. Recovery was observed in the form of regain of reflexes, response to pain, and following verbal command. Patients were shifted in post –procedure room when they were following verbal command.

For statistical data processing tests were used: Mean, Standard deviation, Percentage, P value for significance.

RESULTS AND OBSERVATIONS

In our study in both the groups age, weight and sex ratio are not significant at 95% confidence limit ($p>0.05$).(Table-1)

There is no statistical difference found (Pulse, Systolic BP, Diastolic BP, SpO_2) between two groups before procedure. So both groups are appropriate for matching.

There is no statistical difference found even after Fentanyl premedication before ECT.

Non-Fentanyl Group B shows higher Pulse rate, Systolic BP and Diastolic BP than Fentanyl Group A at 30 sec, 60 sec, 90sec, 2min, 3min, 5min which is **statistically significant** at 95% confidence limit($p<0.05$).

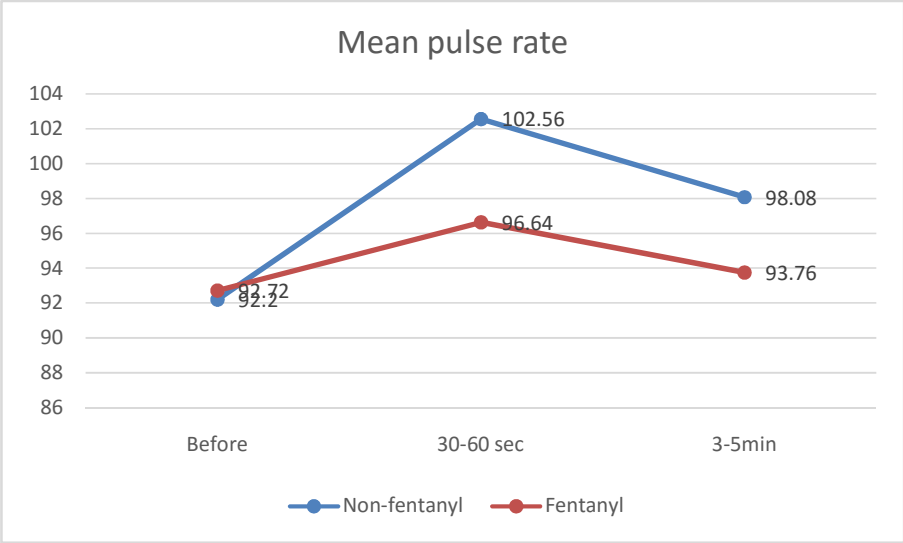
Control Group B (Non-Fentanyl) shows longer seizure duration than Fentanyl Group A at 30 sec, 60 sec, 90sec, 2min, 3min, 5min but it is **statistically NOT significant** at 95% confidence limit($p>0.05$).

There is no difference found in SpO_2 value between two groups.

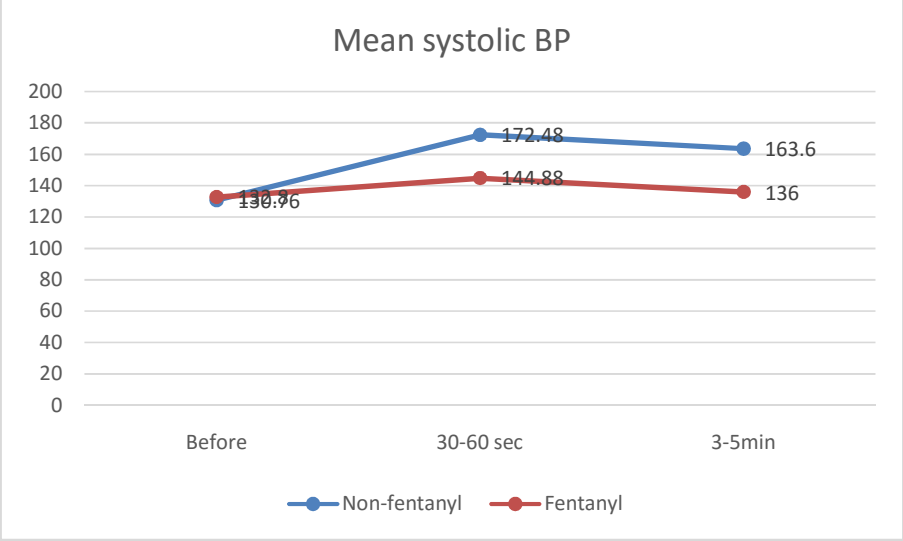
Thus our study indicates that the rise in BP and Pulse rate following ECT is less in Fentanyl group A than Non Fentanyl group B and attenuation of haemodynamic parameters occur earlier in Fentanyl group A than Non Fentanyl group B. The effect on saturation is not significant in both groups. So patients receiving ECT after giving Fentanyl show more haemodynamically stable profile.

	Fentnyl Group A	Non Fentanyl Group B
Age (Years)	36±0.4	35±0.7
Weight (Kg)	49±0.3	51±0.6
Sex (M:F)	27:33	29:31

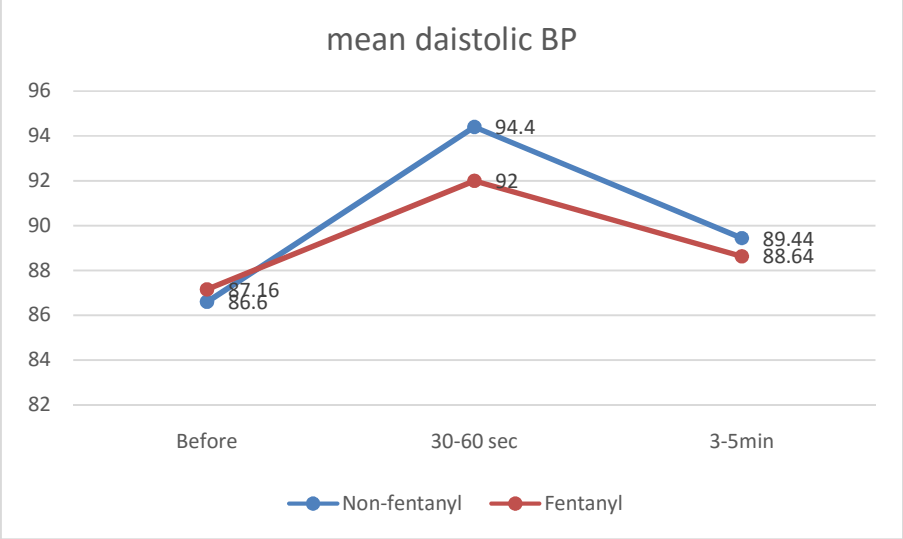
Table-1 : Demographic characteristics



Graph-1:Trend showing mean pulse rate in both group.



Graph-2:Trend showing mean systolic blood pressure in both group.



Graph-3:Trend showing mean diastolic blood pressure in both group.

DISCUSSION

The use of Eletroconvulsive therapy (ECT) to provoke a generalized epileptic seizure was first described byItalian neurologist, lucio bini and ugo cerletti in 1938 and was performed without anesthesia for almost 30 years. [2,4] Now the number of ECT procedures performed each year under general anesthesia.[2] The mechanism of action of ECT is not fully known. ECT affects multiple central nervous system components, including hormones,

neuropeptides, neurotrophic factors and neurotransmitters.[7] During the electrical stimulus there is an immediate, brief and intense parasympathetic activity lasting 10–15 sec, which may cause a transient sinus bradycardia, hypotension or rarely asystole.[2,6] So Atropine or Glycopyrrolate are given before induction of anesthesia to attenuate this vagal effect. Glycopyrrolate has superior anti-sialogogue effects, no adverse central nervous system effects as it does not cross blood brain barrier, and results in less Post-ECT tachycardia. Routine atropine premedication is not recommended due to detrimental effects on myocardial work and oxygen demand.[2,6] This transient vagal discharge is followed by sympathetic discharge, generally peaking at 3–5 min, amplified by adrenal release, which is responsible for the tachycardia and the hypertension observed after the stimulation. Myocardial oxygen consumption, as determined by the Rate–Pressure Product (RPP), therefore increases. RPP increases are more marked with ECT, in older patients and during hyperventilation-induced hypocapnia. Simultaneously, seizure activity increases tissue oxygen consumption, potentially reducing myocardial oxygen supply. Myocardial ischaemia and infarction can therefore occur, particularly with pre-existing disease.[2,6] Cerebral oxygen consumption, blood flow, and intracranial pressure also increase.[2,6] Cognitive adverse effects like Disorientation, impaired attention, and memory problems are frequent post-ictally, and short-term memory impairment may occur. This can be reduced by altering the stimulus intensity or waveform, using unilateral electrode placement, and lengthening the inter-ECT interval.[2,6] During the recovery period, the most common side effects are confusion, agitation, amnesia, and headache.[2] Nearly every Neurotransmitter system is affected by ECT, including Beta-adrenergic, Serotonin, Muscarinic, Cholinergic, and Dopaminergic systems.[7] It is proved that after ECT Epinephrine, Norepinephrine, Adrenocorticotrophic hormone (ACTH), Arginine vasopressin (AVP), and Cortisol level increased.[8]

Pretreatment screening and adequate management of cardiovascular risk factors remain the most important methods of preventing cardiovascular complications caused by ECT. In addition, attenuation of the cardiovascular response during ECT can be important in patients with cardiovascular disease. Many antihypertensive drugs have been administered in an attempt to attenuate the acute autonomic response to ECT. Previously Diazoxide, Hydralazine, β blockers (Esmolol, Labatolol, Propanolol) , Calcium-channel blockers (Nicardipine, Nifedipine) Direct vasodilators(Nitroglycerine) and α2 Agonists/Antagonists(Clonidine), Opioid analgesics(Remifentanyl, Alfentanil) have been used ; [2,4,6] however, the duration of action of these agents is longer than the ECT procedure and anesthesia time. However, when seizure duration is less than 15 seconds in both motor and EEG manifestations , the seizure was limited by insufficient electrical stimulation and that the treatment was inadequate. EEG seizure activity lasting from 25 to 50 s is alleged to produce the optimal antidepressant response. Patients experiencing an initial seizure duration of <15 s or >120 s achieve a less favorable response to ECT and the treatment may be inadequate.[2]

Fentanyl Citrate is a potent Opioid agonist with a rapid onset and short duration of action. It is a potent agonist of μ-opioid receptors in the brain which can be administered by the intravenous or intramuscular routes. The principal actions of therapeutic value are analgesia and sedation. Alterations in respiratory rate and alveolar ventilation associated with opioid analgesic may last longer than the analgesic effect. Fentanyl preserves cardiac stability and blunts stress-related hormonal changes. [8]

Pretreatment with fentanyl resulted in significant attenuation of the Norepinephrine peak after seizure ($P < 0.05$). Only Esmolol significantly attenuated ECT-induced Epinephrine secretion, whereas Fentanyl pretreatment significantly reduced release of ACTH after ECT.[8] The onset of action is from two to three minutes and the duration of action is one to two hours. The peak effect of a single intravenous dose of Fentanyl citrate is noted 5 to 15 minutes following injection. Fentanyl decreased heart rate and arterial blood pressure but did not significantly change stroke volume, cardiac output, central venous pressure, or peripheral arterial resistance. When given as premedication in ECT, it attenuates ECT induced cardiovascular response like tachycardia and hypertension.

CONCLUSION

This comparative observational study of 60 patients, with one group receiving Inj.fentanyl 1 mcg/kg as pre medication has shown more stable haemodynamic profile in terms of changes in Systolic BP and Heart rate than other group (Non-fentanyl). In Fentanyl group Systolic blood pressure and Heart rate increases minimally and returns to normal earlier than Non-fentanyl group. The seizure duration following ECT is also reduced in Fentanyl group though statistically not significant. In studies previously done by other researchers, were seen other effects of Fentanyl like respiratory inhibition and sedation. During this study respiratory parameters changes and sedation score are non-significant in both groups. Thus Fentanyl given in controlled dosage as pre medication smoothens induction and recovery of anesthesia as well as provides more stable cardiovascular response. It also provides efficient intra and post procedural analgesia. Thus as shown by this study opioids have shown a vital role as pre medication in short procedures like ECT.

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Original article

A SURVEY ON COMPARISON BETWEEN PSYCHOLOGICAL AND SOCIAL PROBLEMS FACED BY STUDENTS OF MUNICIPAL CORPORATION RUN SCHOOLS VS PRIVATE SCHOOLS

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Abstract

Introduction- There is a common perception in the society that private run schools are much better at preparing students for the real world when compared to government of municipal corporation run schools. At the same time, it is also very important to understand the challenges faced by students of both the types of educational institutions since an appropriate and targeted counselling based intervention and in the further step, prophylactic counselling tools can be designed, targeted at both the types of institutes. In a world where students live with teachers more than with their own parents it is also very important to understand their grievances and insecurities and solve them by a bipartisan approach using all the resources at our disposal.

Aim – This study is aimed at comparing the problems of Municipal Corporation run school's students vs Private School's students

Materials and Methods –A total of 620 Students from standard 6^{th} and 7^{th} were surveyed of which, 383 Students were from MunicipalCorporation run schools and 237 students were from Private schools. They were individually asked questions by their teachers over a period of 5 months from Dr Bhatt's Counseling Inventory, which is a form with 76 "Agree" "Disagree" option based Questions.

Results and Discussion – The results showed a significant similarity in the problems faced by each school type students. While it would be incorrect to validate a particular School type as better based on a small study, this study could get a bird-eye view of the challenges that students of each school type are facing. While students from Private schools had more difficulty in relations with Parents, Peers and Teachers, Corporation run school's students had more general health problems. Social confidence difficulties were more prevalent amongst corporation run school's students as compared to the latter.

Conclusion – Based on this study, counseling modules should be made to intervene the psychosocial problems faced by these students and also to prevent these psychosocial problems. The private school students had more strained relationships while the Municipal Corporation run school's students had more Confidence and General Health Issues.

Keywords- School Health, Psychosocial, Child Psychiatry

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Introduction:

- School Health in India is a highly debated and publicised topic and rightly so, since schooling of a child would determine the future assets and drawbacks of a child. Proper Psychoanalysis and timely intervention and prophylaxis can immensely influence in helping a child becoming mentally health. According to a study, among 11–15 year olds, 6% had a severe lack of friendship: 9% of those with mental disorders and 5% with no disorder. [1] As per National Alliance of Mental Health, 20% of youth ages 13-18 live with a mental health condition, 11% of youth have a mood disorder, 10% of youth have behaviour or conduct disorder, 8% of youth have an anxiety disorder[2]. Worldwide 10-20% of children and adolescents experience mental disorders. Half of all mental illnesses begin by the age of 14 and three- quarters by mid-20s [3].

Table 1:-Prevalence of Psychiatric disorders amongst adolescents in India classified based on Gender and Area of residence as per National Mental Health Survey by NIMHANS[4]

Characteristics	Prevalence (95% CI)
Any mental morbidity	**7.3 (5.8-8.7)**
Gender	
Male	7.5 (5.1-9.8)
Female	7.1 (5.1-9.0)
Place of residence	
Rural	6.9 (4.0-9.7)
Urban	4.3 (2.3-6.2)
Urban Metro	13.5 (10.4-16.5)

As per the National Mental Health survey conducted by National Institute of Mental Health and Neuro Sciences, the overall prevalence of any mental morbidity in adolescents was 7.3% with a similar distribution between males and females (M: 7.5%; F:7.1%). Interestingly, the problem in urban metro regions was higher as compared to rural and urban non-metro areas (13.5% vs. 6.9% and 4.3% respectively). Common Mental disorders constituted to 5.4% of the disease burden and Neurotic and stress related disorders contributed to about 4.2% of the current burden [4]

Table 2:- shows classification of mental disorders and their prevalence amongst adolescents in India as per National Mental Health Survey by NIMHANS[4]

Diagnostic Categories	Prevalence (95% CI)
Depressive Episode & Recurrent Depressive Disorder	0.8 (0.3 – 1.4)
Agoraphobia	2.3 (1.4-3.1)
Intellectual Disability	1.7 (1.0 - 2.4)
Autism Spectrum Disorder	1.6 (0.9-2.3)
Phobic Anxiety Disorder	3.6 (2.6 - 4.7)
Dysthymia	0.8 (0.2-1.3)
Social Phobia	0.8 (0.3-1.4)
Conduct disorders including Oppositional Defiant Disorder	0.8 (0.3-1.4)
Bipolar Affective Disorder	0.6 (0.1-1.0)

There is a dire deficiency of such surveys in Gujarat, based on which Psychoanalytic and Psychotherapy tools can be devised and used for public welfare.

Aim:

- This study is aimed at comparing the psychosocial problems of Municipal Corporation run school's students vs. Private School's students.
- It is also aimed to determine dimension wise difficulties (Psycho social Dimensions) faced by subject population.

Materials and Methods:

Subject Population-A total of 620 Students from standard 7th were surveyed of which, 310 Students were from Municipal Corporation run schools and 310 students were from Private schools.

Instrument- Dr Bhatt's Counseling Inventory, which is a form with 76 "Agree" "Disagree" option, based Questions.

The main task for the project is to select an appropriate and precise standardized psychological tool for initial screening of the children. The psychological test which will be used for initial screening is a test named Counselling Inventory; it is a standardized test which can be administered in a group setting. This test measures a child on seven different day to day life areas wherein he tends to have or develop problems leading into future pathology. The seven different areas that the test measures are:

1. Relations with the family
2. Relations with teachers
3. Relations with peers(friends)
4. General Health
5. Irritability
6. Social Confidence
7. Lie Scale

Scoring, Interpretation and Identification- Once the test is administered the next step is to evaluate (score) each child's performance on the test. This evaluation helps in identifying those students who have problems as well as the area in which the child has a problem and needs intervention.

Inclusion Criteria-

- 7th Standard students were selected from both Municipal Corporation run schools and Private run schools
- Consent was taken from the parents and teachers of each child.

Exclusion Criteria-

- Students whose Parents or Teachers did not give consent
- Students with a known major organic illness ,which can cause psychological impact

Result and Analysis:

Study Population: A total of 620 students were evaluated. The sample size of contained 7th standard students from both type of schools i.e. Corporation run schools and Private schools in equal amount each i.e. 310.

Table 3

Sex of Students	Corporation run School	Private School	Total
Male	215	170	**385**
Female	95	140	**235**
Total	**310**	**310**	**620**

As per Table 3 the School wise and Gender wise distribution of the study population shows that 69.35% of Municipal Corporation run school's students were Males whereas the

remaining 30.65% were females. In private run schools, 54.8% students were Males whereas, 45.2% were Females. Of the Total population studied, 62.1% were Males and 37.9% were Females. Of the total population studies, 50% belonged to Municipal Corporation run schools, whereas 50% belonged to Private Schools.

Table 4:- Difficulties faced by Students in Various Domains classified based on the type of school

Difficulty Faced in Category	Municipal Corporation run Schools' Students	Private Schools' Students	Total
Relation with Family	12	3	**15**
Relation with Teachers	6	4	**10**
Relation with Peers	5	8	**13**
General Health	14	3	**17**
Irritability	8	11	**19**
Social Confidence	9	3	**12**
Lie Scale	20	16	**36**

This table shows the classification of Difficulties faced by students in various domains based on the type of their school. Of the 620 students studied 2.42% had Relationship issues with family, of which 80% were belonging to Municipal Corporation, run schools whereas 20% belong to Private Schools. Of the 620 students studied 1.61% had Relationship issues with teachers, of which 60% were belonging to Municipal Corporation, run schools whereas 40% belong to Private Schools. Of the 620 students studied 2.1% had Relationship issues with Peers, of which 38.46% were belonging to Municipal Corporation, run schools whereas 61.54% belong to Private Schools. Of the 620 students studied 2.74% had General Health Issues, of which 82.35% were belonging to Municipal Corporation run schools whereas 17.65% belong to Private Schools. Of the 620 students studied 3.06% had Issues in Irritability Domain, of which 42.1% were belonging to Municipal Corporation run schools whereas 57.9% belong to Private Schools. Of the 620 students studied 1.93% had issues in Social Confidence Domain, of which 75% were belonging to Municipal Corporation run schools whereas 25% belong to Private Schools. Of the 620 students studied 5.8% had Issues in

Lying Domain, of which 55.55% were belonging to Municipal Corporation run schools whereas 44.45% belong to Private Schools.

Table 5:- Difficulty faced by students in the Relationship Domain

Difficulty in Relation with	**Corporation run Schools**			**Private Schools**		
	Males	Females	**Total**	Males	Females	**Total**
Family	9	3	**12**	1	2	**3**
Teachers	5	1	**6**	2	2	**4**
Peers	1	4	**5**	2	6	**8**

As per table 5, Out of the 12 students of Municipal Corporation run schools having relationship issues with family, 75% were Males and 25% were Females. Out of the 3 students of Private schools having relationship issues with family, 33.33% were Males and 66.67% were Females. Out of the 6 students of Municipal Corporation run schools having relationship issues with Teachers, 83.33% were Males and 16.67% were Females. Out of the 4 students of Private schools having relationship issues with teachers, 50% were Males and 50% were Females. Out of the 5 students of Municipal Corporation run schools having relationship issues with peers, 20% were Males and 80% were Females. Out of the 8 Private school students having relationship issues with peers, 25% were Males and 75% were Females.

Table 6:- Difficulty faced by students in General Health domain

	Corporation run Schools			**Private Schools**		
Category	Males	Females	**Category**	Males	Females	**Category**
General Health Difficulty	10	4	**14**	2	1	**3**

As per Table 6, Out of the 14 students of Municipal Corporation run schools having General Health Difficulty, 71.43% were Males and 28.6% were Females. Out of the 3 students of Municipal Corporation run schools having General Health issues, 66.67% were Males and 33.33% were Females.

Table 7:- Portraying difficulty in irritability and social confidence issues domain in students

	Corporation run Schools			**Private Schools**		
Category	Males	Females	**Category**	Males	Females	**Category**
Irritability	6	2	**8**	7	4	**11**
Social Confidence	4	5	**9**	1	2	**3**

As per Table 7, Out of the 8 students of Municipal Corporation run schools having issues in irritability domain, 75% were Males and 25% were Females. Out of the 11 students of Private schools having issues in irritability domain, 63.64% were Males and 36.36% were Females. Out of the 9 students of Municipal Corporation run schools having Social Confidence issues, 44.44% were Males and 55.56% were Females. Out of the 3 students of Private schools having Social Confidence issues, 33.33% were Males and 66.67% were Females.

Table 8:- Portraying issues of students in lying domain

	Corporation run Schools			**Private Schools**		
Category	Males	Females	**Category**	Males	Females	**Category**
Lie Scale	15	5	**20**	10	6	**16**

As per Table 8, Out of the 20 students of Municipal Corporation run schools having Lying issues, 75% were Males and 25% were Females. Out of the 16 students of Private schools having lying issues, 62.5% were Males and 37.5% were Females.

Discussion:

Since a study with this target population and aim has not been performed earlier, it would be non- scientific to compare it with other target group studies. The results showed a significant similarity in the problems faced by each school type students. While it would be incorrect to validate a particular School type as better based on a small study, this study could get a bird-eye view of the challenges that students of each school type are facing. While students from Private schools had more difficulty in relations with Parents, Peers and Teachers, Corporation run school's students had more general health problems. Social confidence difficulties were more prevalent amongst corporation run school's students as compared to the latter.

The main findings of this study were,

- Of the 620 students studied 2.42% had Relationship issues with family, of which 80% were belonging to Municipal Corporation, run schools whereas 20% belong to Private Schools.
- Of the 620 students studied 1.61% had Relationship issues with teachers, of which 60% were belonging to Municipal Corporation, run schools whereas 40% belong to Private Schools.
- Of the 620 students studied 2.1% had Relationship issues with Peers, of which 38.46% were belonging to Municipal Corporation, run schools whereas 61.54% belong to Private Schools.
- Of the 620 students studied 2.74% had General Health Issues, of which 82.35% were belonging to Municipal Corporation run schools whereas 17.65% belong to Private Schools.
- Of the 620 students studied 3.06% had Issues in Irritability Domain, of which 42.1% were belonging to Municipal Corporation run schools whereas 57.9% belong to Private Schools.
- Of the 620 students studied 1.93% had issues in Social Confidence Domain, of which 75% were belonging to Municipal Corporation run schools whereas 25% belong to Private Schools.
- Of the 620 students studied 5.8% had Issues in Lying Domain, of which 55.55% were belonging to Municipal Corporation run schools whereas 44.45% belong to Private Schools.

Except for Social Confidence Difficulties, Male students had more difficulty in various domains as compared to Female students. The study "The relationship among bullying, victimisation, depression, anxiety and aggression in elementary school children" also showed that Male students had much more prevalence of Relationship issues with peers

when compared to Females[5]. When compared with "Prevalence of Behaviour Problems among School Children and their Demographic Correlates" study, this study correlates in the aspect that Males have a higher incidence of behavioural problems like irritability when compared with females [6]. This study was in accordance with "Government versus private primary schools in India: An assessment of physical infrastructure, schooling costs and performance" in the aspect that Private school students were much more socially confident when compared to Corporation or Govt. run school students [7]

Conclusion:

- Based on this survey, counseling modules should be made to intervene the psychosocial problems faced by these students and also to prevent these psychosocial problems. The private school students had more strained relationships while the Municipal Corporation run school's students had more Confidence and General Health Issues.
- At the same time more studies like these should be encouraged and conducted targeted at individual standards so that an active Psychological intervention and aid can be provided to the students based and targeted completely on their needs, without adding a burden to the already exhaustive education system.

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ORIGINAL ARTICLE

The Effect of Playing Flute on Respiratory Physiology

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Abstract:

Background:It has been observed that playing a wind instrument (e.g. flute) does have an effect on lung physiology.***Aims &Objectives:***To study the effect of playing flute on lung function and vitals.***Material and Methods:*** The study was conducted on 60 males (30 flautists and 30 normal subjects) ranging from 10-40 yrs. The procedure included estimation of Peak Expiratory Flow Rate (PEFR) by Peak Flow Meter (PulmoPeak PEF meter) and measurement of pulse rate, respiratory rate and breath holding time.*Results:*It was found that the flautists had no significant variation in their vitals and PEFRs. But they did have a positive correlation between PEFR and their period of learning. ***Conclusion***:Our study concluded that the period of learning flute plays a vital role in remodelling respiratory system. So, this technique if exercised in childhood or in early cases of lung diseases(COPD, obstructive sleep apnoea etc.), it would probably benefit them.

Keywords: Accessory muscles of respiration, Circular breathing, Flute, PEFR

Introduction:

During quiet breathing, inspiration is an active process whileexpiration is a passive process due to the elasticity of lungs and chest wall. But this breathing becomes more vigorous while exercising or when the respiratory system is diseased andexpiration no longer remains a

passive function. The act of playing a wind instrument (e.g. flute) does make expiration a controlled active workout. This is achieved by simultaneous breathing in through the nose & pushing out airstored in the cheeks through mouth. This technique used by some wind instrument players produces an uninterrupted continuous tone, this is known as circular breathing. The changes in mechanics of respiration during circular breathing are; recruitement of accessory muscles of respiration, the sternocleidomastoid actions as fixator, scalenes as antagonists for elastic recoil of the respiratory system when playing occurs over functional residual capacity(FRC) whenever possible. The rectus abdominis seem to be mostly used as agonist for specific large pressure requirements[2].

It is hypothesized that such respiratory strategy is expected to improve lung function and vitals over a period of time. Hence, the presentstudy was conducted to compare peak expiratory flow rate (PEFR) and breath holding time (BHT) of flautists and controls, to evaluate the correlation between pulmonary function with vitals- pulse & respiratory rate. PEFR, the expiratory flow rate during the peak of Forced Vital Capacity (FVC) was studied because it primarily reflects large airway flow and depends on the voluntary effort and muscular strength of the individual [3].BHT reflects the subject's breathing pattern and respiratory endurance [4].

Material and Methods:

The study was conducted on flautists in the flute class & on non-flautists in a secondary school and a college and written informed consent was taken from each subject. The approval of Institutional Ethics Committee (IEC) was taken. The method was explained to the subjects.

The study comprised of asymptomatic 60 subjects divided into 2 groups: (30 flautists and 30 non flautists).The groups were matched for age by considering 3 age groups: (10-17yrs, 18-24yrs and 25-40yrs) and for sex by excluding females.Males with the history of any major respiratory illnesses, cold, cough were excluded. An average period of learning was 2.5-3

years with daily *riyaz*of about 2-3 hrs. Material included Peak flow meter (PulmoPeak PEF meter) with European scale (Range: 60-900 EU or Litres/Minute), Measuring Tape. Respiratory history was taken initially.Height of all the subjects was measured in centimetres in standing position.Pulse rate and respiratory rate were taken in sitting position.The subject was asked to blow forcibly after taking a deep breathe through the mouth piece attached to the flow meter and the volume was read.Three readings were taken for the subject and the highest reading of PEFR was considered.The instrument was cleaned with Dettol sanitizer for every subject.For breath holding time measured in seconds, the subject was allowed to sit quietly for 15 minutes. He was instructed to exhale maximally followed by maximum inspiration & then hold his breath till breaking point. Karl Pearson's Correlation Coefficient and t-testwere the statistical tools applied.

Result:

	CONTROL (n = 30)		FLAUTISTS(n = 30)		t	significance
	Mean	SD	Mean	SD	value	
Age	23.1	9.68	22.13	8.61	0.68	NS
Height	171	9.20	166.58	11.78	0.11	NS
PEFR	441.33	130.32	488.33	130.86	0.17	NS
PR	75.13	6.62	73.33	6.96	0.31	NS
RR	17.97	2.61	16.9	2.43	0.11	NS
BHT	44.8	20.38	47.87	18.46	0.54	NS

Correlation coefficient for PEFR in flautists and months of learning: 0.627118

Table 1: Age-Group Wise Variation among Control

Age Group (years)	**Freq**	**PEFR (Lit/min)**		**PR (Beats/min)**		**RR (Breaths/min)**		**BHT (sec)**	
		Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
10-17	10	342	113.71	77.8	9.26	18.3	2.41	37.7	14.24
18-24	10	509	126.88	74.6	3.5	18	3.16	43.7	25.24

25-40	10	473	92.38	73	5.48	17.6	2.41	49.91	19.14
Total	30	441.33	130.32	75.13	6.62	17.97	2.61	44.8	20.38

Table 2: Age-Group Wise Variation among Flautists

Age Group (years)	Freq	PEFR (Lit/min)		PR (Beats/min)		RR (Breaths/min)		BHT (sec)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
10-17	10	361	100.49	74.2	9.19	17.4	2.88	39.1	11.15
18-24	10	529	96.78	74	7.16	17	2.16	51.3	16.73
25-40	10	575	86.7	71.8	4.05	16.3	2.31	53.2	23.75
Total	30	488.33	130.86	73.33	6.96	16.9	2.43	47.87	18.46

Discussion:

The skilful act of prolonged expiration after deep inspiration thus utilising the entire vital capacity while playing a wind instrument increases FVC and thereby elevates PEFR among wind instrument players. Hence, the present study has found a positive correlation between PEFR in flautists and months of learning. But a higher PEFR in flautists is not statistically significant enough to support the hypothesis of improved lung function in wind instrument players. Few studies by Schorr-Lesnick et al(1985), Heller SS, Navratil M also found no difference in lung function [5-7]; but some studies by Cossette et al(2008), Fiz et al,Munn et alshowed that some wind instrument blowershave better pulmonary function because of good respiratory muscle strength.[2,8-10]. Primary factors which affect PEFR are expiratory muscle strength, elastic recoilpressure of the lungs & the airway size. But the other factors like age, height, weight, BMI may alter the result of PEFR. We also correlated PEFR with the height of subjects and found a linear relationship among both the groups; but it was not statistically significant to be considered a confounding factor. Height of an individual decides the lung size which ultimately is responsible for one's respiratory compliance. Da Costa and Goh (1973) also correlated peak flow with height and found a positive correlation [11]. Changes in breathing pattern modify various central & autonomic mechanisms along with mechanical & haemodynamic adjustments[12].

It causes parasympathetic predominance which reduces one's vitals over a period of time. Hence, it was hypothesized that playing a wind instrument would decrease pulse rate and respiratory rate and would improve breath holding time (BHT). But, in the present study no significant change in BHT or attributes of autonomic nervous system, pulse rate & respiratory rate were seen. This study did have a variation in breathing pattern but daily hours of learning and the total period till date also contribute in deciding the final outcome of ANS. Hence, if the study is extended further, we might get a positive result.

Conclusion:

Considering the facts, it can be opined that regular flute playing does cause a parasympathetic predominance like other slow breathing type (Pranayama) and also strengthen the oropharyngeal airway[1,13]. Hence, if the habit of playing flute or any wind instrument is inculcated in childhood then it will definitely strengthen the ventilatory muscle control. This would allow the lungs to function optimally even in diseased states. This will act as a primary prevention for asymptomatic healthy individuals and as a secondary prevention for the patients of 'early' bronchitis (lower airway), obstructive sleep apnoea (upper airway). In near future, it can also be considered as a supportive measure for COPD [14, 15].

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Original article

MODERATE SEDATION IN SPINAL ANAESTHESIA: A COMPARATIVE STUDY OF EQUISEDATIVE INFUSIONS OF PROPOFOL AND DEXMEDETOMIDINE

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ABSTRACT

Background and Aims: There has been a paradigm shift of focus toward quality of spinal anaesthesia with sedation being an integral aspect of this regional anaesthesia technique. Thus, this study was designed to compare efficacy of intravenous dexmedetomidine and propofol for moderate sedation during spinal anaesthesia.

Material and Methods: A total of 60 patients of age group 18-50 years of American Society of Anaesthesiologists grade I & II, posted for surgeries under spinal anaesthesia were randomly divided in to two groups (*n* = 30 each); Group D received infusion of dexmedetomidine 1 μg/kg over 10 min followed by maintenance infusion of 0.5 μg/kg/h. Group P received infusion of propofol 5 mg/kg/h for 10 min followed by the infusion maintenance of 1.5 mg/kg/h. Level of sedation (using observer's assessment of alertness/sedation score), onset and recovery from sedation, hemodynamic changes, and overall patient's satisfaction were assessed.

Results: The onset and recovery from sedation were significantly earlier with propofol (15.57 ± 1.89 min vs. 27.06 ± 2.26 min; $P < 0.001$) however intra-operative sedation, and overall patient's satisfaction was significantly better with dexmedetomidine group ($p < 0.05$). Duration of postoperative analgesia was significantly prolonged with dexmedetomidine (225.53 ± 5.61 min vs.
139.60 ± 3.03 min; $P = 0.0013$). Mean heart rate and blood pressure were significantly lower in the propofol group ($P < 0.05$).

Conclusion: Dexmedetomidine with its stable cardio-respiratory profile, better sedation, overall patient's satisfaction, and post-Operative analgesia could be a valuable adjunct for intra-operative sedation during spinal anaesthesia.

Key words: Dexmedetomidine, moderate sedation, propofol

INTRODUCTION:

Spinal anaesthesia offers many advantages over general anaesthesia, however, the fear of surgery, the unfamiliar environment like operation room, the sight and sounds of sophisticated instruments, and the masked faces makes the patient panic. The intense sensory and motor block, continuous supine position and the inability to move the body also brings a feeling of discomfort and phobia in many patients [1].

Thus, sedation has been shown to increase patient satisfaction during regional anaesthesia. Moderate sedation is defined as "*A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by mild tactile stimulation. No intervention is required to maintain a patent airway and cardiovascular stability*." Earlier, this kind of sedation was popularly known as "*Conscious Sedation*" but Joint Commission on Accreditation of Healthcare Organization (JCAHO) in 2001 has coined the term *Moderate Sedation* [2].

Many agents have been used for this purpose. Continuous infusion of Propofol is an useful method for sedation because of the easy titratability and rapid emergence. Intravenous (i.v.) Dexmedetomidine prolongs the duration of spinal anaesthesia, provides sufficient sedation, with fewer side effects.

Hence we designed this study to evaluate the sedative, hemodynamic and side effects of i.v. dexmedetomidine and propofol when used for intra-operative moderate sedation along with spinal anaesthesia.

MATERIALS & METHODS

It was an observational analytical study in which effects of Moderate sedation in spinal anaesthesia was observed and analyzed by using two different drugs, Propofol versus Dexmedetomidine . The study was initiated after taking approval from hospital ethical committee. Patients included in this study were informed about the procedure in their own language, and a written informed consent was taken from all of them.

The study was carried out in 60 patients between 18 to 50 years of age, of both genders (male-42 and female-18), weighing 50 to 80 kgs having physical status of American Society of Anaesthesiologists (ASA) i.e. ASA–I (A normal healthy patient) and ASA–II (A patient with mild systemic disease). The Patients who were administered spinal anaesthesia were restricted to lower abdominal and orthopaedic elective surgical procedures which were anticipated to complete within 2 hours were included.

Patients with history of allergic reaction to the study drugs, those with significant cardiac , pulmonary, hepatic or renal dysfunction, Obese patients , those with history of chronic use of sedative drugs, full stomach patients, pregnant patients and epileptic patients were excluded from the study.

The patients were divided into two groups which were:

Group P (n=30) Patients who were administered Propofol for moderate sedation.

Group D (n=30) Patients who were administered Dexmedetomidine for moderate sedation.

The patients were connected to multipara monitors for monitoring non-invasive blood pressure,SpO2, and electrocardiogram. Baseline measurements were recorded. A large vein was chosen for intravenous i.v. access and 18G cannula was secured. Another wide bore intravenous access was established on the forearm of the other limb, for administration of the study drug infusion. All the patients were preloaded with 15 ml/kg of ringer's lactate prior to spinal anaesthesia. Under aseptic precautions, lumbar puncture was performed at L3-L4 inter vertebral space with 23G Quincke type spinal needle. After free flow of CSF had been obtained, 3.5 ml dose of 0.5% Bupivacaine heavy was injected into the subarachnoid space. Patients were then made to lie in the supine position. Study drugs were started according to the group allocated, after assessment of maximum sensory blockade. Sedative premedication was not given to any patient to avoid interference with results.

Group D (dexmedetomidine group) received an initial dose of 1 mg/kg infused over 10 min, followed by maintenance of 0.5 mg/kg/h. Group P (propofol group) received an initial dose of 5 mg/ kg/h infused over 10 min followed by maintenance of 1.5 mg/ kg/h. Standardized anaesthetic protocol was followed in all the patients. Heart rate, mean arterial pressure, SpO2 , respiratory rate and sedation score were recorded initially at 5 minute intervals for 10 minutes and later at 15 minute intervals till the end of procedure. Patients were informed to communicate about the perception of any pain or discomfort during surgery. Intra-operative sedation level was assessed using modified observer's assessment of alertness/ sedation scale (OAA/S) [3].

Observer assessment of alertness/sedation scale (OAA/S)

Scores	Descriptions
5	Responds readily to name spoken in normal tone
4	Lethargic response to name spoken in normal tone
3	Responds only after name is called loudly and/or repeatedly
2	Responds only after mild prodding or shaking
1	Responds only after painful trapezius squeeze
0	No response after painful trapezius squeeze

The onset of sedation was taken as time taken to reach OAA/S score of 4 as it most closely meets the condition of moderate sedation. The infusion of propofol and dexmedetomidine was continued at a constant rate throughout the procedure and was not altered till a sedation score of 3. Level of sedation was assessed at every 5 min interval for the first 10

minutes and later at 15 minute intervals till the end of procedure. The infusion was stopped at time of skin closure.

Duration of effective analgesia (time interval between administration of spinal to first request for supplementary analgesics) and recovery time (time taken to return to sedation score 4 or more on modified OAA/S scale after stopping the infusion of study drugs) was recorded in all the patients studied. Overall satisfaction of patients was also assessed.

All patients were watched for side effects such as nausea, vomiting, hypotension, respiratory depression, shivering, motor weakness, and seizures both intra-operatively and postoperatively. During the procedure, if bradypnea (RR <10) or SpO2 92% or less were recorded, 4 L/min of supplemental oxygen was administered via a nasal cannula and rate of infusion of the drug is reduced, aiming to awaken the patient and to resume his normal breathing. Hypotension (MBP <50) was treated with fast 0.9% normal saline and i.v. bolus of mephenteramine 6 mg and bradycardia (HR <50) with 0.5 mg of i.v. atropine stat, with a reduction in the rate of infusion.

RESULTS

VARIETY OF SURGICAL PROCEDURES	
Indications	**Frequency**
Hernia / Hydrocele	15
Orthopaedic Surgery	12
Apppendicectomy	15
Ovarian Tumours and Mass	03
Tubal ligation	05
Vaginal hysterectomy	10
Total	**60**

All the 60 patients who were enrolled in the study completed the study protocol and included in the data analysis. No spinal anaesthesia failure was observed. There were no significant differences between the groups with respect to patient age, weight or sex. The mean duration of the procedure was similar in the Group D and Group P. The mean time to reach the required level of sedation (OAA/S-4) was observed at 5min in Group P and 10 Min in group D .Recovery time to OAA/S score 4 or more was significantly prolonged in Group D as compared to Group P ($P < 0.001$) .Duration of effective post-op analgesia was significantly prolonged in Group D as compared to Group P.

Demographic and recovery profile

Demographic and recovery profile	Group D	Group P
Number of patients	30	30
Age (years)	36.70±9.29	38.40±9.04
Sex (male/female)	20/10	22/8
Weight (kg)	55.53±5.31	55.05±6.05
Mean duration of surgery (min)	62.85±16.18	60.03±18.81
Mean time to reach target level of sedation (Min)	5±1.13	10±0.72
Mean duration of effective analgesia (min)	225.53±5.61	139.60±3.03
Recovery time to OAA/S* score 4 or more (min)	27.06±2.26	15.27±1.89
**OAA/S = Observer's Assessment of Alertness/Sedation*		

Overall satisfaction was significantly higher in Group D patients(77.50%) as compared to Group P patients(55.0%).All patients in the dexmedetomidine group were satisfied with their anaesthesia and would choose the same technique again. Two patients in the Propofol group would prefer an alternative technique in the future. Baseline MBP was comparable in both the groups. Significant fall in MBP was observed at 5 min in Group P as compared to Group D and this fall persisted throughout the study period. Group D had no significant change observed from baseline. The baseline mean HR was comparable among both the groups. Significant decrease in HR was observed in group D at 5 min that persisted throughout the procedure as compared to Group P. Mean HR in Group P had no significant change from baseline.

Incidence of side effects and complications among two groups

Complication	Number of patients (%)	
	Group D	Group P
Nausea/vomiting	03 (10.0)	01(3.30)
Bradycardia	04 (13.3)	03 (10.0)
Shivering	01 (3.30)	01(3.30)
Hypotension	02 (6.60)	07 (23.3)
Dry mouth	02 (6.60)	01(3.30)
Pain at site of injection	01(3.30)	08(26.6)
Neurological	00 (0.0)	00 (0.0)

Higher incidence of bradycardia, nausea and vomiting were noted in Group D compared to hypotension and pain at the site of injection in Group P. None of patient required to stop or reduce the rate of infusion of propofol and dexmedetomidine for management of hypotension and bradycardia. Neurological complications were not noted among any of the groups.

Discussion

During surgery under spinal anaesthesia unpleasant sensory sensations occur as afferent sensory supply to gut is not blocked. Vagal afferent is also not blocked and severe discomfort occurs while manipulating abdominal structures. Sedation besides relieving the above mentioned problems provides additional relief from anxiety and apprehension. Similarly listening to noises of cutting instruments is very disturbing for the patient and he is relieved of this agony by Moderate sedation.

The most widely used technique for administering sedation in regional anaesthesia is the *intermittent intravenous bolus dose technique*. This technique has been shown to be associated with peaks and troughs in plasma concentration producing *significant side effects and delayed recovery*. *Continuous infusions* have been proved to produce, lesser side effects, faster recovery, easy controllability over the desired depth of sedation and, should the regional block prove to be ineffective, easy conversion to general anaesthesia [6].

The early onset time of sedation in the propofol group compared to dexmedetomidine group occurs because propofol is highly lipophilic and distributes rapidly into the central nervous system. Arain, *et al [4]*. noted that the targeted sedation was achieved within 10 min with propofol but took 25 min with dexmedetomidine [4]. Both Groups D and P had significantly deeper level of sedation. Group D when compared with Group P has significantly deeper level of sedation throughout the procedure.

The mean recovery time was shorter in Group P as compared to Group D possibly due to rapid metabolism and excretion of propofol. Mean duration of effective analgesia was significantly prolonged in the dexmedetomidine group as compared to propofol group. Dexmedetomidine produces analgesia by binding to adrenoreceptors in the spinal cord. Jorm and Stamford, observed that dexmedetomidine has an inhibitory effect on the locus coeruleus which is located at the brain stem.[5] This supraspinal action could explain the prolongation of spinal analgesia after i.v. administration of dexmedetomidine. In our study, a significant decrease in mean HR with dexmedetomidine was observed at 5 min of starting the infusion.

This difference persisted throughout the procedure and could be attributed to sympatholytic properties and vagal mimetic effects of dexmedetomidine. The results of our study correlate well with Al-Mustafa, *et al*.[7] MBP was significantly decreased in Group P at 5 min after starting infusion and persisted throughout the procedure as compared to Group D. There was no significant difference in MBP from baseline value in Group D throughout the whole duration of procedure. The fall in MBP in patients receiving propofol could be attributed to direct powerful inhibitory effect of propofol on sympathetic outflow causing vasodilatation. Dexmedetomidine is also known to decrease sympathetic outflow and circulating catecholamine levels and would, therefore, be expected to cause a decrease in MBP. However, larger doses of dexmedetomidine have a direct effect at the postsynaptic vascular smooth muscle to cause vasoconstriction, and it is possible that the sympathoinhibitory effects of dexmedetomidine were slightly opposed by direct α-2 mediated vasoconstriction [4] [7].

Both propofol and dexmedetomidine are known to have minimal respiratory depression when used as sedative agents which is evident for our results wherein the SpO2, RR did not differ significantly from baseline. Ryu, *et al*.[8] observed that dexmedetomidine was associated with fewer incidents of oxygen desaturation and
a reduced need for the oral cavity suction than Remifentanil during flexible bronchoscopy. Postoperative shivering was significantly reduced in the dexmedetomidine.

The above factors such as better sedation, stable cardio-respiratory profile and post operative analgesic effect resulted in significantly better overall patient satisfaction in the dexmedetomidine group.

Conclusion

The present study shows that both dexmedetomidine and propofol produce adequate level of sedation but dexmedetomidine could be used as BETTER alternative to propofol for intra-operative moderate sedation for surgeries under spinal anaesthesia.

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Original article

To assess pressure pain threshold in young healthy females during examination stress

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ABSTRACT: From the time of conception, stress is present in human life (1).Stress either physical or psychological can induces neural, endocrine and behavioural responses and depends on personal relevance.generalized nociceptive hypersensitivity and alterations in pain sensitivity in stress is determined by pressure pain threshold (PPT) measured by the algometer.**aim and object** of the study is to evaluate the relation of stress and painin healthy young medical girls students by observing the changes in the PPT (pressure pain threshold) of different groups of muscle of upper limb during the examination stress.. Materials and Methods :Sudy was conducted on 30 healthy young girls medical students of 1st year in the department of physiology ,Ruhscmsjaipur..subject group were examined 15 day before the examination and one day before the examination.PPT of the dominant

upperb limb muscles egTricep, Biceps and dorsam of hand. RESULT: pressure pain threshold (PPT) of the biceps and hand muscles have a significantly positive correlation with the acute stress of examination than the triceps muscles which have a non significant correlation P value of biceps and hand muscles and triceps muscle is(003) and(.000)and (112).respectively.,Discussion :Increased pain sensititivity in the examinedmuscles isdue to disinhibiting central nervous system structures involved in regulation of attention eg:- ascending reticular activating system, HPAaxis,brain neuronal activity resulting in sensitization of nociceptive neurons and in enhanced pain sensitivity .conclusion: acute stress of examination modulates pain in humans and contributes to individual variability in pain affect and pain-related brain activity.

Keywords : Pressure pain threshold (PPT),HPA Axis –hypothalamic –pituitary adrenal axis,nociceptors,algometer,hyperalgesia.,allodynia.

.**INTRODUCTION** :

Stress is a common phenomenon to all of us in the modern world, when we think e.g. job deadlines of exams etc . The relationship between stress and pain is complex .acute effects of stress on pain perception are somewhat ambiguous.both have an adaptive functions and try to protect the organism in case of harm and danger. international association for the study of pain (ISAP) defines pain as “an unpleasant sensory and emotional experience of a body sensation associated with actual or potential tissue damage, or described in terms of such damage (2) external stress such as academic examination have a potential impact on sensitivity of muscle of deep tissue. Previous studies shows that exposure to psychosocial stresses may cause alterations in pain sensitivity to pressure determined by pressure pain threshold and generalized nociceptive hypersensitivity can be detected (3,4,5,6)pain stimulation is used in several established laboratory for stress tests .PPT measurement by the algometry is objective, reliable, simple, and noninvasive evaluation of the relation of stress and pain .The phenomenon of stress-induced analgesia is well documented in animal research and individual variability in the stress response in humans may produce corresponding changes in pain.stress can activate sympathetic nervous system and the hypothalamus-pituitary-adrenal (HPA) axis, which causes the release of glucocorticoids (GCs) into the bloodstream . GC binds with GR,(glucocorticoid receptors) it translocates into the nucleus where it initiates gene transcription .Revollo and Cidlowski, reveals thatacute stress can produce this optimal level of GCs, whereas in chronic stress the increased level of GC (7) the length of GC/GR interactions causes detrimental changes egdownregulate transcriptional activity ,induce structural plasticity in the CNS, and causes neuropathic pain that can be characterized by the presence of allodynia,andhyperalgesia,an exaggerated response to an already painful stimulus. In humans, recent findings indicate that acute stress response involves large-scale reorganization of the brain networks responsible for the regulation of vigilance and sensory processing, including the anterior mid-cingulate cortex (aMCC), the frontoinsular cortex and subcortical regions (Hermans et al., 2011(8)“Vyas et al.(2002) showed that chronic immobilization stress (two hours per day for 10 days) induced dendritic atrophy in CA3 pyramidal cells in the hippocampus,(9) The Alexander et al. (2009) also explored the idea

that NMDA receptors play a role in stress-exacerbated nerve injury-induced neuropathic pain (10). Administration of the GR antagonist and NMDA receptor antagonist prior to acute restraint stress in mice diminished injury-induced allodynia that proves the mechanism of stress induced pain sensitivity.many studies suggest that acute stress is likely to regulate the pain-related brain responses and the perception of pain(8)
AIM AND OBJECT of the study is to assess in healthy young medical girls students the changes in the PPT (pressure pain threshold) of different groups of muscle of upper limb during the examination stress..

MATERIALS AND METHODS:

Study was conducted on 30 healthy young girls medical students of 1st year in the department of physiology ,Ruhscmsjaipur.. age range was 18 and 22 years. all the subjects were free from any muscle pain etc .informed consent was obtained from all subjects prior to start of the study .

Procedure:students are examined twice on each day. following parameter were assessed height, weight, BP, pulse, measurement of PPT of tricep, biceps,anddorsom of hand were carried out by using pressure algometer.pain sensitivity was carried out on the dominant arm.all the measurement were taken by a single examiner and subject was instructed to be relaxed during the examination and no information about the aim was given to the subject to avoid observational bias.

Algometermeasurement :pressure algometry measurements were performed by an electronic algometer to assess PPT of tricep, biceps, dorsam of hand .the subject group were examined 15 day before the examination and one day before the examination. Examination is considered as the source of stress .the PPT was determined as the point at which the subject sensed a change from a pressure to a feeling of pain. the tip of algometer with a surface of 1 mm square is applied to the skin and ppt were assessed on muscular sites on triceps, biceps and dorsam of hand . average 3 reading were taken on each site and mean value was taken of all 3 successive readings. reading is noted in range of algometer is 0-145 kpa.The PPT measured in respect of a muscle does not only refer to the pressure sensation on the muscle, but also as a measure of sensitivity to the feeling of pressure on the skin.

OBSERVATION:This study was done to evaluate the influence of stress and anxiety on the pressure pain threshold of upper limb muscle, 30 healthy girls medical students of 1st year Ruhscmsjaipur were stressed into this study before they undertook an academic examination.the subject group were examined 15day before the examination and one day before the examination and compared .statistical analysis was done by the spss-22 software .the mean age,height,weight of the subjects was 19.6±0.932 years , 5.250 ±7.268 feet and 45.7±±11.40 kg. respectively as mentioned in table -1. systolic and diastolic blood pressure and pulse were measured and statistical analysis was done by the spss software .pressure pain threshold (PPT) value of different muscle of the dominant hand is calculated

at two sitting first 15 day before the examination and second at one day before the examination.mean and standard deviation is calculated and compared by using paired t test and p value is calculated. As shown in the table -2and 3.table -2shows the finding that systolic blood pressure is significantly decreased but diastolic blood pressure is increased in the post period (1 day before). Pulse rate is non significantly decreased in the post period.ppt value of the biceps and hand muscles were significantly decreased in post period but ppt of triceps is non significantly decreased.,table-3 shows ,there is a significantly negative correlation is present of systolic and diastolic blood pressure with stress at pre and post.period ..andnon significant relation of pulse is present. biceps and hand muscles have a significantly positive correlation but the triceps muscles have a non significantcorrelationwith stress in pre and post.period.

Table-1

Parameter	mean	Std .Deviation
Age (years)	19.6	±0.932
Wt.(kg)	45.75.	±11.40221
Height(feet)	5.250333	±7.268

mean ± std deviation of normal parameters

Table-2

paired sample statistics

S. N.	Parameters	15 day beforeexam (pre)		1day before exam (post)	
		mean	std. deviation	mean	std. deviation
1	BP(systolic) mm of hg	118.80	±9.412	115.20	±8.892
2	BP(diastolic) mm of hg	72.97	±7.289	75.87	±6.124
3	Pulse	90.63	±14.85	89.300	±14.1644
4	Biceps (PPT)	42.567	±8.2365	39.167	±6.5394
5	Tricep(PPT)	41.500	±6.5482	38.967	±8.5237
6	Hand (PPT)	42.33	±9.557	38.53	±9.557

mean ± std deviation of different parameters at two time of examination .

Table 3 Paired sample test

		paired differences				
S.N.	Parameters	15 day before exam(pre) mean ± std deviation	1day before exam(post) mean ± std deviation	mean (paired)	p value	significance
1	BP(systolic) mm of hg	118.80±9.412	115.20±8.892	-3.400	.000	sig
2	BP(diastolic) mm of hg	72.97±7.289	75.87±6.124	-2.900	.000	sig
3	Pulse	90.63±14.85	89.300±14.1644	1.3333	.083	non sig
4	Biceps(PPT)	42.567±8.2365	39.167±6.5394	3.400	.003	sig
5	Triceps(PPT)	41.500±6.5482	38.967±8.5237	2.533	.122	non sig
6	Hand(PPT)	42.33±9.557	38.53±9.557	3.800	.000	sig

RESULT:. This study was done to evaluate the influence of stress and anxiety on the pressure pain threshold of upper limb muscle,30 healthy girls medical students of 1st year ruhscmsjaipur were include into this study before they undertook an academic examination. informed consent was obtained from all subjects prior to start of the study .age range was 18 and 22 years. all the subjects were free from any muscle pain. the subject group were examined 15day before the examination and one day before the examination. on each day we assessed the following parameters egheight, weight, blood pressure , pulse and pressure pain threshold (PPT) of arm muscles including biceps and triceps , and muscle of dorsam of hand by using pressure algometer.statistical analysis was done by the spss-22 software .the mean age,height,weight of the subjects was 19.6±0.932 years ,5.250 ±7.268 feet ,45.7±±11.40 kg. respectively as shown in table-1

normal physiological parameter and ppt value of arm muscles were compared 15days before (pre)and 1day before (post) the examination .In the table -2 mean ± std deviation of allthe parameters is mentioned and in the table -3 values are compaired by using the paired t test .and p value is calculated .

The systolic blood pressure is significantly decreased from (118.80±9.412)mean±std deviationto (115.20±8.892)but diastolic blood pressureis increased from (72.97±7.289)mean±std deviationto (75.87±6.124)in the post period .P value is(.000)of both systolic

and diastolic BP and it is negatively significant with the stress in pre and post period.Pulse rate is decreased from (90.63±14.85)mean±std deviation to (89.300±14.1644)in the post period . p value isnon significantie (.083).PPT value of the bicepsand hand muscles were significantly decreased in post period from(42.567±8.2365) mean± std deviation to (39.167±6.5394) and from (42.33±9.557) to(38.53±9.557)respectively.P value of biceps and hand muscles is positively significant with stress in pre and post period ie(.003) and(.000)respectively . PPTof triceps is decreased from(41.500±6.5482) mean±std deviationto(38.967±8.5237)and .P value is nonsignificant(.112) with the pre and period of stress.

DISCUSSION :.

Previously many studies are done to evaluate the effect of stress on the PPT on different muscles of the body. In this study wetry to find out the influence of stress and anxiety on the pressure pain threshold of arm muscleseg biceps and triceps and muscle of dorsam of hand. The pressure algometeryis broadly used in reaearch to assess deep tissue sensitivity for pain perception in different muscle. examination period is taken as a psychological stress by the students and to prove the relationship between psychological stress and pressure pain sensitivity of muscle study is conducted on thefemale medical students of first year. pressure pain threshold (PPT)of arm muscle is measured during different time of examination (15 day and 1 day before exam) at all sites.. In our study little attention has been paid to the perceptual response of thearm and hand muscles of the dominant side.it has been emphasized that the validity of stress response in human subject is strongly influenced by the type of stress stimuli and the degree of personal relevance.in our study students are undergoing in academic examination that is longlasting stressful condition have a potential impact on sensitivity of muscle of deep tissue .lower level of ppt is observed during just one day before the of examination may be due to more stress at last moment of examination.Our result support the relationship between psychological stress and pressure pain sensitivity of muscle. Previous studies also hypothesize that stress include neural, endocrine and behavioural responses. The neural response is activation of the sympathetic nervous system, resulting in release of epinephrine and norepinephrine (11)whereas the endocrine response involves stimulation of the hypothalamic-pituitary-adrenal (HPA) axis (12). The behavioural responses include increases in pain threshold (13) increased pain sensititivity in the examined area is by disinhibiting central nervous system structures involved in regulation of attention .eg:- ascending reticular activation system.this disruption may result in hypervigilance,dysfunctional reactivity of the hpa axis resulting in a relative hypocortisolism. koltzenburg et al (16)Chrousos et al and herrero et al (14,15) have same findings as in our study .there is increased pain sensitivity during stress.it is hypothesized that different mechanism eg. hypocortisolism, increased sensitization of nmda receptors on central neurons, ongoing sensitization of nociceptive neurons and the wind-up of spinal cord neurones causes enhanced pain sensitivity.

AsmaHayati AHMAD and Rahimah ZAKARIA study the Pain in times of Stress and found That stress system does not functions alone; the genetic and psychological makeup of a person, experience and environmental factors all affect this .(17)

vidal&jacobs,(1982)study on animals reported stress induced hyperalgesia(SIA)following non-noxious stress in the rat.(18),

Gameiro, et al (2006) study found thathyperalgesia can be attributed to the fact that repeated exposure to stressors leads to the release of endogenous opioids, resulting in over-activation and desensitization of opioid receptors (tolerance)tolerance to the analgesic effects of opioids is associated with hyperalgesia and is related to increased activity of n-methyl-d-aspartate receptors (19,20,21,22)

The study conducted on high job strain persons(23,24)and on 308 danish office workers(4) reported decreased PPT measurements among participants with persistent stress as compared with non-stressed employees .there is lower ppt values in the trapezius, the supraspinatus as well as the tibia in men as well as women.

Study done on 26 opera singers to assess the acute stress response before, during and after a performance and founds the same increased PPT (3)

Another study founds that hypersensitization plays a part in many chronic pain disorders such as fibromyalgia syndrome (fms), which has been associated withsubstantial decrease in pain threshold (25,26)

Some studies showing the result that there are some changes occure at the cns level 18,19,20 ,21 ,27and there is overactivation of the hormonal stress–response system as a result of ongoing strain often leads to adown-regulated adrenocortical responsiveness characterized by relative primary adrenal hypocortisolism with increased feedback inhibition of the hpa axis. (heim, et describe the
potential role of hypocortisolism in the pathophysiology of stress-related bodily disorders. (28)

Astudy done by etiennevachon-presseau et al andCoghill et al fonds that acute stress contributes to individual differences in pain and pain-related brain activity in healthy and chronic pain patients.(29,31)

Bornhövd et al.(2002)found in a single-trial fmri study that painful stimuli evoke different stimulus-response functions in the amygdala, prefrontal, insula and somatosensory cortex: (30)

Maixner shows relation between sensitivity of patients with painful temporomandibular disorders to experimentally evoked pain(32)

It has been shown that anxiety exacerbates pain through activation in the hippocampus (33)

Quintero et al.demonstrated that hyperalgesia due to an inescapable subchronic stress is resulted from diminished central 5-HT activity (35)
Chronic stress has been shown to attenuate dopaminergic activity in the nucleus accumbens, resulting in hyperalgesia (34)A study using positron emission tomography (PET) showed that psychological stress in humans causes mesolimbic dopamine release(36)Using pain as the stressor, another PET study showed that basal ganglia dopaminergic activity is involved in pain processing, as well as emotional processing of the pain stimulus (37)Nigrostriatal D2 dopamine receptor activity was related to the sensory aspect of pain, whereas mesolimbic D2/D3 dopamine receptor activity was related to negative affect and fear. This finding outlines the regions involved in the physical and emotional responses to painrelated stress in humans.

AmbraMichelotti,in 2000 founds decreased Pressure-Pain Thresholds of the Jaw Muscles During a Natural Stressful Condition in a Group of Symptom-Free Subjects (38) The contradictory finding are present in the study done by Kholoud S. AlGhamdi, in2009"Effect of stress on pain perception in young women" and found that Various types of physical and mental stressors significantly increased PPT by Activating intrinsic pain suppressive mechanisms of the brain.(39)

CONCLUSION :Pshycological stress of examination is a subjective and emotions perception depend on genetic and psychological makeup of a person. acute stress of examination modulates pain in humans.there is hyperalgesia but in some previous studies there was analgesia effectdue to activation of opoid analgesic system.Duration of stress is mainly modify the mechanism. Activation of reticular activating system and disinhibiting HPA axis responsible for hyperalgesia or increased pain sensitivity..

CARRY ON MESSAGE;
In our study we suggest for future work to observe the pain sensitivity in different type of stress(physical and psychological) estimation of the glucocorticoids level and the brain imaging during the stressfull situation is helpful for evaluation of the relation of stress and pain sensitivity.

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Original article

A STUDY OF RELATIONSHIP BETWEEN MATERNAL SERUM CALCIUM LEVEL AND NEONATAL BIRTH WEIGHT IN FULL TERM DELIVERED BABIES.

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Key words: Maternal serum calcium,foetal birth weight.
Abstract: Pregnancy is a period of physiological changes in body during which the nutritional needs of developing foetus depends on the mother.This study establishes the effects of maternal calcium on the neonatal birth weight in full term delivered babies.
Method:A comparative study was performed on 60 antenatal women divided into 2groups.Group1 comprised of 30 antenatal women who received calcium supplements andGroup2 having 30 antenatal women who did not take calcium supplements.Permission from Dept.of OB&G,B.J.M.C and Civil Hospital,Ahmedabad obtained. Biochemical analysis of calcium was done.Birth weight of neonates born at full term was noted.
Result: Women with normal serum calcium levels delivered full term babies with normal birth weight.Women with low serum calcium levels delivered full term babies with low birth weight Calcium levels were high in women who took regular calcium supplements in their antenatal period than the women who were not on calcium supplements.
Conclusion: Calcium is an essential nutrient during pregnancy that supports the growth and development of the foetus,especially because of its maternal-foetaltransfer.Maternal calcium level thus can be responsible for determining the neonatal birth weight.Therefore,it is necessary to educate all pregnant women about the need for adequate calcium supplementation during pregnancy and thereafter.

Key Words: Maternal serum calcium,foetal birth weight.

Introduction:

Calcium (Ca2+) is crucial for a healthy diet. It plays a key role in cell signaling for regulating various cellular processes. It helps in mineralizing bones and teeth. Calcium is the primary mineral in the human body. Normal serum level is 8.4-10.4 mg/dl.Calcium is most abundant in Bones (99%) & about 1% resides as freely available extracellular fluid. Daily calcium recommendation is 1000 mg/day .During Pregnancy calcium metabolism is significantly affected as calcium is crucial for the fetal bone development. Calcium is constantly transported to the developing foetus through the placenta, mainly during the third trimester of pregnancy. To sustain the accelerated demand for calcium during pregnancy, the body increases the intestinal absorption of calcium; decreases calcium excretion and also increases the resorption of calcium from the maternal skeleton. Low intake of calcium may have negative affects on foetal bone development. In India, almost half of the pregnant women do not have access to recommended dose calcium crucial for maintaining a healthy body during pregnancy and lactation.Decreased supply of calcium during pregnancy results in preeclampsia, low birth weight, preterm delivery, neonatal low bone mineral density and caesarean section.In 2011 & 2012, WHO recommended the dose of calcium supplementation in pregnant women to prevent and treat pre-eclampsia and eclampsia.In both guidelines, WHO strongly recommends supplements of about 1.5 grams to 2.0 grams of elemental calcium daily in areas of low dietary intake of calcium and for those at high risk of developing hypertensive disorders during pregnancy.Despite being prescribed 1000 mg/day of calcium supplements, most women ignore the consumption of calcium rich diet primarily due to the lack of awareness about its importance. The following study demonstrates the effects of calcium on the neonatal birth weight.

Materials and Methods:

This is a comparative Study conducted in theDepartments of Obstetrics & Gynecology and Physiology, B.J.Medical College and Civil Hospital, Ahmedabad. Required permission and clearance was obtained from Obstetrics & Gynecology Department, B.J.Medical College and civil hospital, Ahmedabad. 60 pregnant women in last trimester of pregnancy were enrolled. Written informed consent was taken from all the subjects. Confidentiality of all the subjects was maintained. The sample size of the study was 60 pregnant women with in the age range of 19 to 35yrs. Duration of this study was 3 months (June-August 2017). A full medical history of all the subjects was first obtainedincluding their obstetric history by administering a detailed questioner.Inclusion criteria for these study was healthy pregnant women in their last trimester. Exclusion criteria were subjects with anycomplication during antenatal period, metabolic or endocrine disorders. Pregnant ladies with history of Hypertension, Diabetes mellitus, Heart disease,any other chronic infection or renal disease were excluded

from this study. History of Preterm deliveries and Intra uterine growth restrictions were also excluded.
All the Subjects were divided into two groups:
Group 1: This group comprised of, 30 pregnant female who were supplemented with 1000mg/day of calcium during antenatal period.
Group 2: This group included 30 pregnant female who were not consuming additional calcium during antenatal period.
Each of the pregnant womenwas subjected to a thorough medical examination.
5 ml of venous blood was collected from each subject under aseptic precautions, for estimation of serum calcium. To record the details of delivery & the new born follow-up was done.

RESULT:
By using the serum calcium levels and the neonatal delivery details, the neonatal birth weights was compared among the low calcium group and the normal calcium group.Furthermore, Calcium supplementations and gravida analysis was done using the serum calcium levels and the neonatal delivery details, with calcium levels. The data obtained were tabulated in MS Excel Worksheet & were expressed as mean ± SD. For parametric variability considering $p < 0.05$ to be statistically significant, independent t-test was applied.

Table 1

Variables	Group	Sr.Calcium	p-value	Birth Weight	p-value
Ca2+. supplementation	Yes (30)	9.06±0.58	0.007	2.80±0.47	0.003
	No(30)	8.47±0.61		2.14±0.45	
Ca2+. supplementation taken	Primi Gravida(20)	9.15±0.58	<0.001	2.85±0.58	0.02
	Multi Gravida(10)	8.94±0.61		2.65±0.53	
Ca2+. Supplementation not taken	Primi Gravida(14)	8.36±0.61	0.03	2.42 ±0.47	<0.001
	Multi Gravida(16)	8.17±0.58		2.18±0.45	

Graph 1

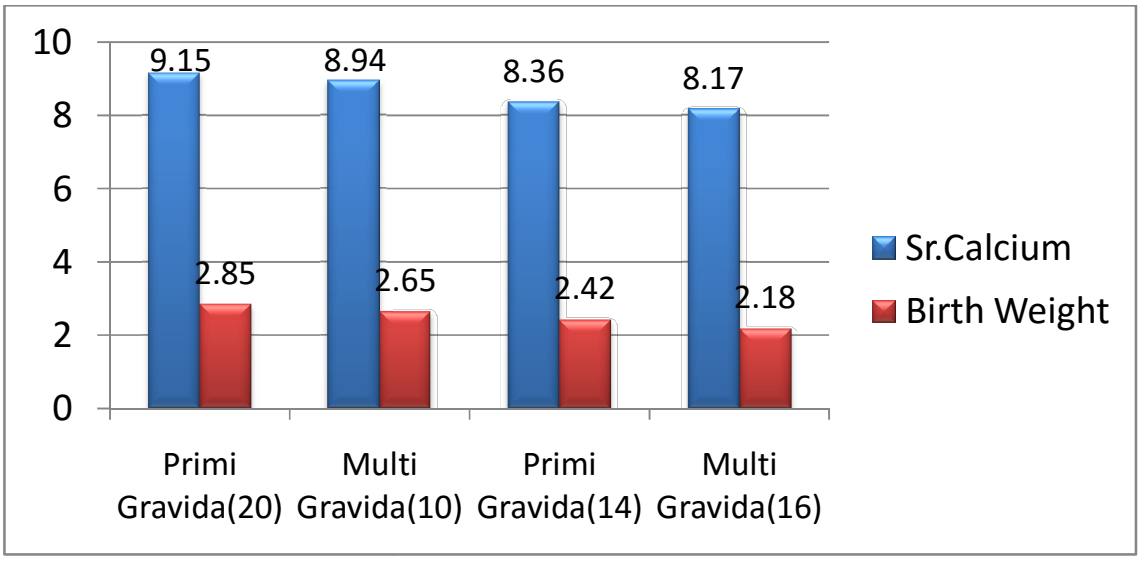
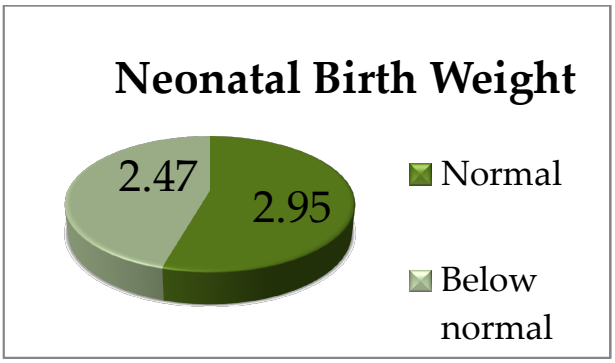


Table 2

Serum Ca2+ (8.4-10.4mg/dl)	Neonatal Birth Weight	p-value
Normal(34)	2.95±0.30	<0.001
Below normal(26)	2.47±0.58	

Graph 2



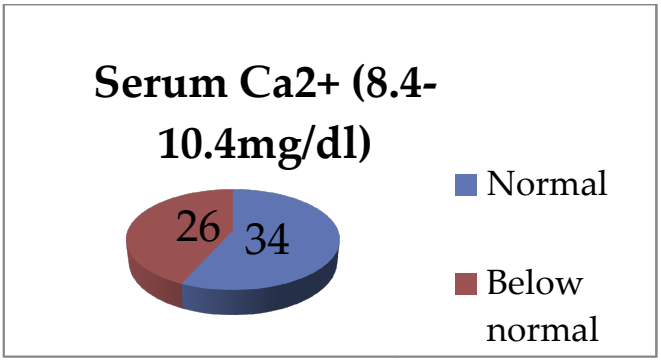


Table: 2 shows that mothers who had normal serum calcium levels delivered normal birth weight babies compared to the low calcium group(p-value < 0.001).

Discussion:

The findings of our study concur with that of Winston W. K. Koo et al [1]. The study showed that increase in the rate of calcium, is maximum in the final trimester while decreased level of Serum calcium was evidently related to the low birth weight of the neonates.

The findings of this study were also similar to the study conducted by Landing MA Jarjou et al[2] which states that Calcium is crucial in determining the birth weight and emphasizes on its vital role for lactation.

The three primary sources of calcium in pregnant woman to sustain fetal bone growth are accelerated absorption of intestinal calcium, reduced renal calcium excretion and calcium resorption from maternal skeleton. The surge in intestinal calcium absorption is vital

compensatory mechanism for securing supplementary calcium during pregnancy. Simultaneously, vitamin D concentration also increases (4–62%) in the third trimester. As a result, Ca2+sensing receptors that sense extracellular Ca2+ levels and initiate parathyroid hormone and vitamin D levels maintain Ca2+homeostasis.

Christopher S. Kovacs et al [3]stated that absorption of calcium through intestine increases by 60–70% during pregnancy, from about 33–36% in the non-pregnant state to 50–56% in the second trimester and to 54–62% in the third trimester. Renal calcium absorption due to the increased glomerular filtration rate during pregnancy, is observed to increase by 46% during the period of pregnancy among women who consumer approx.1200 mg/d calcium.

His study states that foetal weight between 28 to 40 weeks of gestation triples but calcium content quadruples due to increased bone mineral mass. Several other studies suggest that extremely low maternal calcium consumption exposes the foetus to the risk of growing low bone mass. The placenta transports calcium actively to the foetus and maintains total and ionized calcium at about 1mg/dl above maternal calcium levels.

In another study Sana M Ceesay et al [4]demonstrated that the three primary sources of maternal calcium necessary for foetal bone growth are: higher absorption of intestinal calcium, reduction in excretion of renal calcium and calcium resorption from maternal skeleton.

Furthermore, study conducted by AdekunleDawoduand, Reginald, C. Tsang et al[5]emphasized that increase in intestinal calcium absorption is a crucial compensatory process for generating surplus calcium during pregnancy. Simultaneously, increase in vitamin D concentrations (4–62%) in the third trimester also occurs. Thus Ca2+homeostasis is maintained by the Ca2+sensing receptors that sense extracellular Ca2+ levels and initiate parathyroid hormone and vitamin D levels[6].

Conclusion:

Maternal calcium is therefore playing a significant influence upon neonatal birth weight. Most of the pregnant women in India, fail to ensure intake of the recommended amount of nutrition needed for the foetal growth. During pregnancy, about 1 g/day of calcium supplementation, especially during, the mid pregnancy period becomes essential for the mineralization of the foetal bone.

Thus pregnant women must be educated about importance of calcium consumption for neonatal growth. Necessary supplements of calcium should be provided during their antenatal visits. Calcium levels need to be sustained not only during pregnancy and lactation, but throughout entire life as it is needed for the maintenance of the bone.

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Original article

A STUDY ON LONGTERM OUTCOMES OF POSTERIOR URETHRAL VALVES

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Posterior urethral valves (PUV)

ABSTRACT:

Introduction: Posterior urethral valves (PUV) constitute a rather rare congenital disorder with membranous obstruction of the male posterior urethra. This form of infravesical obstruction is potentially seriously detrimental to the more proximal urinary system already prenatally. The aim of study is to study patients with posterior urethral valve and their Biochemical parameters, imaging studies and urodynamic measurements for diagnosis and identifying complications of the disease. **Materials and Methods:** This study includes a retrospective study of 35 consecutive patients who were admitted in Pediatric Surgery Department of our institute from January 2015 to January 2017.

All the patients were admitted and underwent biochemical and radiological investigations. Depending in the results the definitive treatment was planned. All the patients after discharge were kept on regular follow-up. Most of our pateints presented at 1 year or less of age. **RESULT**: Vesicoureteric reflux was seen in 23 patients(65.71%), comprising of 32 units. (9 patients had bilateral reflux, left sided reflux was present in 8 patients and right sided reflux was present in 6 patients) 12 patients did not have reflux. The urine examination showed infection in 33 patients(94.28%) and presence of albumin in 10(28.57%). S. Creatinine and blood urea were raised in 25(71.42%) case presentation. Out of the 35 patients, 34 patients underwent cystourethroscopy. In all patients cystourethroscopy showed presence of classical Type -I PUV. There was no case of Type III PUV in our study.

Conclusion: With availability of renal scan and urodyanamic study, more and more patients of bladder dysfunction and secondary upper tract changes are likely to be diagnosed and evaluated. Increasing awareness and facility for antenatal diagnosis in early gestational age, allows us to terminate pregnancy for the fetus with adverse sonographic findings secondary to posterior urethral valves.

Keywords:Posterior urethral valve,PUV,lower urinary tract

INTRODUCTION:

Urethral valves manifest in various age groups-from neonatal age to early adolescence with varying presentations. The renal parenchymal changes may persist despite successful treatment of the primary obstructing posterior urethral valves leading to renal insufficiency. Incidence of renal failure in literature is reported at 25-35%.

Posterior urethral valves occur in 1:5000live births and in approximately every 1/1250 fetal ultrasound screening [1]. Despite the high prevalence, the most common treatment for valves identified in utero is fetal termination. Routine prenatal ultrasound is currently not recommended until 20 weeks of gestation. New understanding of the pathogenesis of renal dysplasia and long-term renal dysfunction demonstrate that changes in renal development and architecture may begin to occur as early as 14 weeks of gestation [2]. Improved mortality and long-term morbidity from posterior urethral valves and congenital bladder outlet obstruction will likely remain unchanged until it is possible to intervene prior to the onset of irreversible renal damage.

Posterior urethral valves (PUV) constitute a rather rare congenital disorder with membranous obstruction of the male posterior urethra. This form of infravesical obstruction is potentially seriously detrimental to the more proximal urinary system already prenatally. Consequences to bladder and kidneys may be irreversible, leading to chronic renal failure, end-stage renal disease and finally to death. Given its rarity, most medical professionals do not encounter many PUV patients, and few units have more than a limited experience in

treating them. Nevertheless, in recent years mortality in PUV has been reported to have declined due to earlier diagnosis and referral to paediatric urological centers, improved instrumentation, achievements in pre- and postoperative management and greater experience in care of these severely ill patients (Cuckow 2006). As a consequence, there are now many patients requiring renal replacement therapy at a much earlier age (Dinneen and Duffy 1996, Cuckow 2006). Again paediatric surgeons and urologists treating these patients as a child rarely meet them in adulthood. Long-term outcomes of PUV are not properly known. In Finland, late outcomes of PUV patients have not been investigated. Systematic follow-up studies elsewhere are also lacking

Controversy persists regarding catheter drainage or non-catheter drainage as a preliminary management. Endoscopic fulguration remains the gold standard of treatment, once the patient is stabilized of altered internal milieu, with a necessary long term follow up [3].

Methodology:

This study includes a retrospective study of 35 consecutive patients who were admitted in Pediatric Surgery Department of our institute from January 2015 to January 2017.

All the patients were admitted and underwent biochemical and radiological investigations. Depending in the results the definitive treatment was planned. All the patients after discharge were kept on regular follow-up. Most of our pateints presented at 1 year or less of age.(table 1)

TABLE 1

Age Group	Number of Cases
< 1 Month	10
1-12 Months	11
1-5 years	9
> 5 years	5
Total	35

The urine examination showed infection in 33 patients and presence of albumin in 10. S. Creatinine and blood urea were raised in 25 case presentation, while the Urine specific gravity more than 1020 indicating adequate concentrating capacity of kidney was found in 5 patients only. All the neonates (10/10) and 63.6% of patients of 1-12 months had raised S.Creatinine.

(Table 2)

TABLE 2

Urine Examination	Albumin ++	10
	Infection : Microscopy	33
		23
Raised RFT		25
Urinary Specific Gravity > 1020		5/22
Decreased CCr		13

Serum Potassium > 6		11

Vesicoureteric reflux was seen in 23 patients, comprising of 32 units. (9 patients had bilateral reflux, left sided reflux was present in 8 patients and right sided reflux was present in 6 patients) 12 patients did not have reflux. (Table 3)

TABLE 3

	Grade I	Grade II	Grade III	Grade IV	Grade V	No. of Cases
Left			3	5	1	8
Right	-	-	2	2	2	6
Bilateral			2	1	6	9
Total	-	-	7	8	9	23

Out of the 35 patients, 34 patients underwent cystourethroscopy, while one child who was in moribund condition did not improve after initial resuscitation anddied before definitive management.

In all patients cystourethroscopy showed presence of classical Type -I PUV. There was no case of Type III PUV in our study.

TABLE 4

Cystourethroscopy			34
	Posterior Urethral valve (Type I) Bladder	34	
	* Trabeculations	34	
	*Trabeculations with diverticulum	1	
	* Trabeculations with Cystitis	20	
	Ureteric orifice		
	Normal	14	
	Rounded	10	
	Golf Hole	10	
Fulguration of Valve	Bugbee electrode	34	34
	Resectoscope	00	

DISCUSSION:

Posterior urethral valves cause a broad array of renal parenchymal and vesical dysfunction. Because urethral valves are present during the earliest phase of fetal development, primitive tissues mature in an abnormal environment of high intraluminal pressure resulting in permanent maldevelopment(hydronephrotic, cystic or dysgenetic kidneys) and longlasting functional abnormalities, with gradual progress towards renal insufficiency. Incidence of renal failure in literature is reported at 25-35% [4].

The mortality in the present series was 11.4% (4 out of 35 patients). The patients had altered renal function and bilateral gross VUR and associated renal dysplasia.

Vesico-ureteric reflux was present in 66% (23 out of 35 patients). In the survivors, it subsided in 46% (16 out of 35 patients), while 17% required nephrectomy. Another 17% (6 out of 35 patients) required reimplantation and 17%(6 out of 35 patients) showing

persistent reflux are awaiting final decision. Persistent hydronephrosis was present in 15% (5 out of 35 patients) of patients and vesical dysfunction in 20% (7 out of 35 patients). Bladder neck obstruction and urinary incontinence wasnot encountered in any of the patients. Long term follow up showed adequate renal function and satisfactory growth in 70% (25 out of 35 patients) of survivors while the remaining 30% of patients are progressing towards end stage renal disease.

CONCLUSION:

With availability of renal scan and urodyanamic study, more and more patients of bladder dysfunction and secondary upper tract changes are likely to be diagnosed and evaluated [5] [6]. Increasing awareness and facility for antenatal diagnosis in early gestational age, allows us to terminate pregnancy for the fetus with adverse sonographic findings secondary to posterior urethral valves. Vesicoamniotic shunt or fetal surgery is not feasible in our set up.Neonatal and pediatric dialysis and renal transplantation facilities are needed to reduce the mortality due to posterior urethral valves [7] [8]

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CASE REPORT

A RARE CASE REPORT OF YOLK SAC TUMOR

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ABSTRACT:

Yolk sac tumor also known as endodermal sinus tumor is a rare malignant tumor that usually occurs in second decade of life. We report a case of yolk sac tumor which occurred in 13 year old girl. She presented with lower abdominal pain for about one month. Ultrasound

findings revealed a large multilocular mixed solid cystic mass lesion with internal septations .doppler study reveals internal vascularity in mass lesion.CECT scan of abdomen and pelvis revealed large mixed density enhancing mass lesion arising from pelvis. Her pathology report revealed yolk sac tumor of the ovary.

INTRODUCTION:

- Yolk sac tumor, also known as Endodermal sinus tumor is a rare malignant ovarian tumor that usually occurs in the second decade of life. Yolk sac tumor (YSTs) can be seen in males and females, involving the testis, ovary, and other sites, such as the mediastinum.
- Ovarian germ cell tumors arise from primordial germ cell derived from the embryonal gonads. Malignant germ cell tumor comprise less than 5% of all ovarian neoplasms. The incidence range from 1 to 6% in west and from 8 to 19% in Asia [1]. The most common form of malignant germ cell tumors are dysgerminoma (80%), Yolk sac tumor (EST) (70%), and immature teratoma .
- Embryonal carcinoma, choriocarcinoma and polyembryoma are very rare type of germ cell tumour. Malignant mixed germ cell tumor is a type of tumour that consists of two or more malignant germ cell component. Most common combination reported is dysgerminoma and EST and rarest component include embryonal carcinoma and immature terotoma. Tumour markers such as AFP, hCG and LDH contribute to the diagnosis, prognosis and follow-up of the disease. We report a rare case of mixed germ cell tumour with yolk sac component.

CASE REPORT:

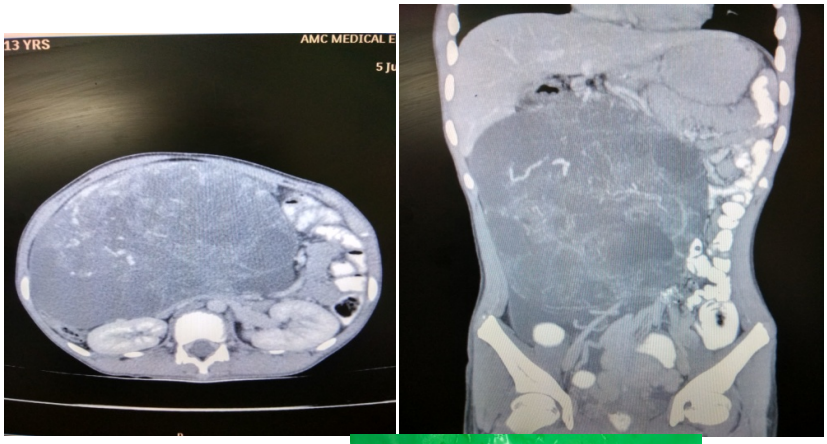
- A 13 year old girl presented with chief complaint of abdominal distension since one month. Her menstrual history revealed that she had experienced menarche at the age of 12 and her cycles were regular. Her physical examination and vital signs are normal. On abdominal examination a huge mass up to the level of xiphisternum was palpated. There was no guarding or rebound tenderness.

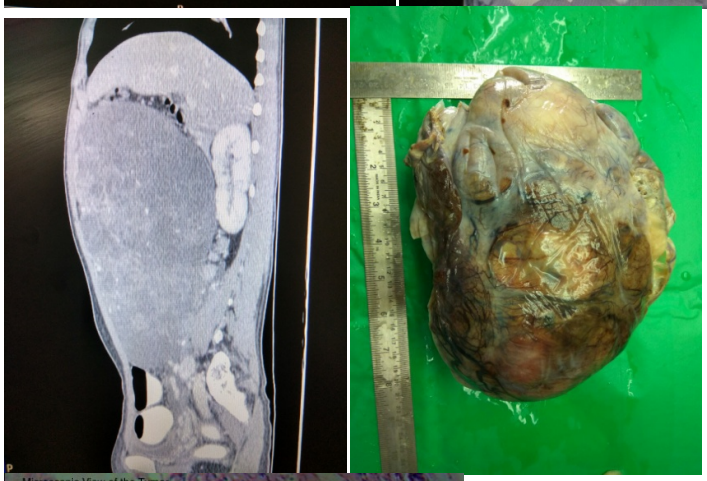
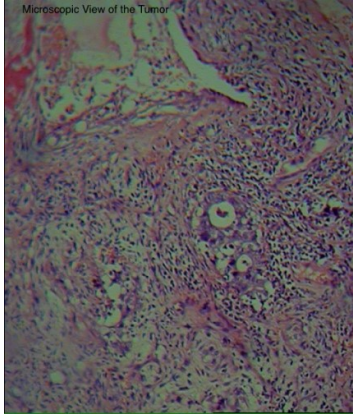
MATERIALS & METHODS:

As the Girl presented with abdominal distenstion & abdominal pain like symptoms, She underwent hematological studies & radioimaging in form of Chest x-ray & USG Abdomen & pelvis ,CECT Abdomen & Pelvis.

- Routine blood reports and serum biochemistry was normal.
- On ultrasound, a large well defined mixed echogenic predominantly cystic lesion with internal septations and intervening solid areas was noted arising from pelvis extending from the hypogastrium to epigastric region. The lesion showed intervening vascularity on colour Doppler study. Right ovary was not visualised separately from the lesion.Uterus and left ovary appeared normal.

- On CECT scan study of abdomen and pelvis ,there was evidence of a 22 x 15 x 20 cm sized large, well defined cystic lesion arising from pelvis to epigatric region and extending from right hypochondrium to right iliac fossa and & crosses midline. The lesion show multiple enhancing septations and enhancing solid components within it on post contrast study. Right ovary was not visualised separately from the lesion.Uterus and left ovary appeared normal. P/o ovarian cystic mass lesion was noted
- Intraoperatively there was a huge mass arising from right sided ovary with intact capsule. There was no free fluid in the abdominal cavity. Abdominal cavity was explored and there was no evidence of malignant disease elsewhere. Left sided ovary and uterus was normal looking. Tumour was removed and biopsy was taken from right ovary.
- On Histopathology, mixed malignant germ cell tumor wiyh predominat yolk sac component was confirmed.

- 

DISSCUSSION:

- Yolk sac tumor is the second most common malignant germ cell tumour of ovary in children,accounting for 9-16% of pediatric ovarian tumour. The peak incidence of endodermal sinus tumour of ovary is during the second decade of life,with a median age of 19 years.
- Abdominal pain is most common presenting complain and most patients have a palpable abdominal & pelvic mass. Because this tumour grows rapidly,the duration of symptoms usually only 1-4 weeks. Occaisonally the patients presents with acute

abdominal pain due to torsion or ovarian rupture. Because increased levels of serum alfa fetoprotein are found in patients with Yolk sac tumor of the ovary. Serum alfa feto protein is used as a tumour marker when evaluating response of treatment.

- Differential diagnosis include Cystic teratoma,Tuboovarian mass,Mesenteric cyst,Gastrointestinal duplication cyst.
- Most yolk sac tumors of ovary are unilateral with no more than 1% of cases being bilateral.and large,measuring between 10 cm and 30 cm. The typical neoplasm manifests as a large complex pelvic mass that extends into the abdomen. The yolk sac tumor is often characterized by extremely rapid growth and extensive intraabdominal spreading with poor prognosis. The cystic areas are composed of epithelial line cysts produced by the tumor or with coexisting mature teratomas.(1) Affected patients can be diagnosed by elevated serumα-fetoprotein (AFP) and lactate dehydrogenase (LDH) levels.(1,2) However, reports of preoperative diagnosis of endodermal sinus tumor in an adolescent by combining images from ultrasound , contrast enhanced CT scan of abdomen and pelvis and magnetic resonance imaging (MRI) as well as AFP determination are rare.(1,2).
- Yolk sac tumor of the ovary are aggressive tumours that until recently were fatal in approximately 85% cases with more than 90% patients dying within 2years of diagnosis. Today,surgery and aggressive combinations of chemotherapy make it poosible to achieve survival on over 80% of patients with stage 1 tumours.(3,4)
- Because of rapid growth of this tumor a delay in diagnosis and subsequent treatment may harm the patients and sharply reduce chances of survival especially in patients with advanced disease. There fore,this entity should be considered and serum alfa feto protein levels obtained early when girls or young women present with large complex or predominatly cystic pelvic mass.

CONCLUSION

Although rare, pubertal young female patients with complains of abdominal distension and pain which show large complex or predominatly cystic pelvic mass on ulatrasonography and CECT study. P/o yolk sac tumor should be taken into consideration.

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Original article

"STUDY OF AWARENESS OF PERSONAL HYGIENE AMONGST TRIBAL PRIMARY STUDENTS IN PALGHAR DISTRICT, MAHARASHTRA"

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ABSTRACT - Introduction: Health education in school children is most effective method of health protection.Many rural school children suffer from many morbidities.The current study was undertaken to understand the awareness of personal hygiene, to determine the prevalence of lice infestation and scabies among the rural primary school children. **Materials and Methods**: Thiscommunity based cross-sectional, study was conducted among children of age group 6 to 13 years attendingtwo state government run primary schools in rural area. Pre-designed, pre-validated, semi-structured demographic proforma and questionnaire was used. Information regarding demographic characteristics and personal hygiene practices was interviewed.**RESULTS**Out of 101 participants, Lice infestation was seen in 42.22% of girls, and 12.5% of boys, whereas Scabies infection was present in 2.22% girls and 3.57% boys.**Conclusion**:The study revealed satisfactory awareness and good condition of personal hygiene. There was no gender-wise difference in hygienic practices followed, but the prevalence of lice infestation was more in females.

Keywords: personal hygiene, rural area, lice manifestation, scabies, gender-wise difference

Introduction:

Schools are considered as an important setting to build up the skills and capacity of students, parents and wider community to combat the challenges of outbreak of communicable diseases.[1]Health education to school children in their formative age is the most effective method for protection and promotion of their health. Primary school children are more open minded and are likely to be receptive to changes in ideas and agreeable to modifications of their habits.[2]In several developed countries, school health programs have evolved during the post-second World War period and addressed nutritional and physical-fitness aspects.[3] Still, Each year, diarrheal and respiratory diseases kill > 5.5 million people and lead to > 140 million disability-adjusted life-years lost.[4] The vast majority of these deaths occur among children inlow-andmiddle-incomecountries,whereaccessto health-care services is suboptimal.[5] About 30-50% of rural school children suffer from many morbidities like anaemia, worm infestation, under nutrition and dental caries.[6]

The current study was undertaken to understand the awareness of personal hygiene, to determine the prevalence of lice infestation and scabies among the rural primary school children in Raigad District of Maharashtra and to determine the gender-difference in personal hygiene if any.

Methodology:

This community based cross-sectional, study was conducted among 101 children of age group 6 to 13 years attendingtwo state government run primary schools in Bandhan and Kondhan village of Palghar District in Maharashtra. The schoolsare primary co-educational school comprising of classes I to IV, where children mainly from neighbouring locality

study.The study was conducted over a period of one month in September 2016. Permission of the institute and the representative authorities from primary school were obtained before commencing the study. The students not fitting in the age group of 6 to 13 and who were absent in the study period were excluded from the study. Pre-designed, pre-validated, semi-structured demographic proforma and questionnaire was used as a tool for data collection. Information regarding demographic characteristics and personal hygiene practices was interviewed. The policy for personal hygiene of school was interviewed from the respective authorities.

Table-1. Age-wise, class-wise distribution of students.

Standard	Males (%)	Females (%)
1st	15 (26.79%)	11 (26.83%)
2nd	16 (28.57%)	10 (24.39%)
3rd	16 (28.57%)	9 (21.95%)
4th	9 (16.07%)	15(36.59%)
	56	45

Table-2. Mothers' Occupation

	Males	%	Females	%
Housewife	42	75.00	28	62.22
Farmer	10	17.86	11	24.44
Other	4	7.14	6	13.33

Table-3. Fathers' occupation

	Males	%	Females	%
Majuri	22	39.29	16	39.02
Farmer	10	17.86	8	19.51
Company employee	17	30.36	10	24.39
Other	4	8.93	8	19.51

Table-4. Tooth brushing

	Males	%	Females	%
Tooth brush	50	89.29	41	91.11
Fingers	6	10.71	4	8.89
Tooth paste	38	67.86	35	77.78
Tooth powder	18	32.14	10	22.22

Results:

Demographics: Out of 101 participants, 56 were males (mean age: 8.06 ±0.90yr) and 45 were females (mean age: 8.00±1.59yr) (Table-1). The mothers of majority of children (69.3%) were housewives (69.31%), farmers (20.79%), a few were on job or daily-wage workers (9.9%). One boy's mother was ASHA worker. (Table-2) Out of 101, 4 children had lost their father. Amongst remaining, majority were daily wages workers(38.61%), company employee (26.73%), farmers (17.82%). Others were driver, shopkeeper, daily-wage worker. (Table-3)

All children reported to be taking bath daily. 82.22% girls and 46.43% boys, respectively, were taking it twice a day. Only 4.44% girls and 12.5% boys were taking daily head-bath. All children reported to be washing hands before eating and after visiting toilet.

Articles used for brushing and its frequency are given in Table-4.

More than fifty percent of children reported to be using open air toilet. All the girls and 94.64% of boys cut nails regularly.

All children reported to be cleaning ears regularly. All used hairpin except one who reported to be using cotton earbud.

Lice infestation was seen in 42.22% of girls, and 12.5% of boys,

whereas Scabies infection was present in 2.22% girls and 3.57% boys.

Discussion:

Health behaviours are strongly determined by the different social, economic and environmental circumstances of individuals and populations.[7]It is said that people of rural areas have been trapped in various unhygienic health practices and undesirable health attitudes because of poverty, illiteracy, ignorance, misconception and superstition.[8]

In this study, soap and water were reported to be usedmost often for hand washing after visiting toilet, single boy and girl used ash and water, and one girl used mud and water for the same. There was no gender discrimination in hand washing practices, unlike reported by Deb[3], that girls had better hand-washing practices than boys before eating.

In the current study, 97.48% of girls and 96.43% of boys were wearing washed clothes regularly. This is comparable with the study conducted at Kolkata. [3]
A considerable number of girls and boys (42.22% and 33.93%) were reported to be wearing siblings' or others' clothes.

The prevalence of pediculosis in this study is 25.74%. It is comparable with studies by Talukdar *et al*18.5%[8]and Dongre*et al*[9],42.8%, In a study from Nagpur this is 3.5%.[10]

The prevalence of scabies in this study is 2.97% This is comparable with study by Charuhas *et al*[10]Nagpur 5.6%. Other studies have reported a higher incidence ranging 21.7% to 36.6%.[8,9]

Limitations: Sample collection for the study is only from a convenient group from two schools of same region. Investigation for intestinal parasitic infestations is not done due to feasibility.

Conclusion:

The present study revealed satisfactory awareness and good condition of personal hygiene amongst primary school children in the given area. There was no gender-wise difference in the practices of hand washing, cutting nails and wearing clean clothes, except for the prevalence of lice infestation.

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Conflicts of interest: None

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11TH ACADEMIC MEET

On 22/9/18

A Multi disciplinary conference

CME ON:

INFORMATION TECHNOLOGY IN MEDICAL EDUCATION

Date: 22/9/18 Time 8-00AM to 6-00 PM

Tentative Venue: AMCMET medical college LG Hospital II floor Time : 08-30 AM to 6-30 PM

Topics to be covered

Virtual reality a learning tool

Electronics record research tool

Patient empowering apps

Stethoscope

Mobile apps

Social media

Robotics

Medical calculator

Tele medicine and beyond tele ICU and emergency

Artificial intelligence

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