



I.M.A.G.S.B. NEWS BULLETIN

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GUJARAT MEDICAL JOURNAL

INDIAN MEDICAL ASSOCIATION, GUJARAT STATE BRANCH

Office : A.M.A. House, 2nd Floor, Opp. H. K. College, Ashram Road, Ahmedabad-380 009.

Phone : (079) 2658 73 70 E-mail : imagsb@gmail.com, gujaratmedicaljournal@gmail.com

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STATE PRESIDENT'S MESSAGE

"You can not cross the sea ;
merely by standing and staring at the water"

- Rabindranath Tagore

Respected Members,

Season's Greetings

"Third wave of COVID-19 Pandemic" is now under control.

Fortunately morbidity & mortality was less in this wave, thanks to good vaccination coverage and our own immunity. Still we have to be very cautious and observe all precautions; as advised by government authority.

As a medical practitioners, we all have served our patients, to the best of our ability.

You all deserve special appreciation for your active efforts in controlling this 3rd wave of Pandemic.

On 19th February, 2022 ; we had attended all State Branch President/Secretaries Meeting at IMA Head Quarters, New Delhi. We had presented our branch activities & our future plans. Everybody appreciated our efforts and success of our "Membership Drive".

We had organized "State Working Committee" meeting on 26th February-2022 at SOU ECO Resort, Ektanagar (Kevadiaya). This meeting was very well attended by more then 60 SWC members & more then 35 spouse & children. I am thankful to all SWC members for their active participation in this important meeting.

Recent Ukraine crisis have caused detrimental effect on our UG Medical Students aboard. We expect some amicable solution from NMC and Central Government for their further studies.

"Heat Wave" has already started. All are requested to take care of yourself and your near and dear ones.

High temperatures could lead to heat exhaustion, especially for those spending a lot of time outdoors. "The human body sweats to reduce its core temperature in a normal situation. In the case of a heat wave, the body's core temperature increases, because of prolonged sun exposure or physical exertion in high temperatures. Heatstroke occurs when a person's body temperature rises to 104 degrees F (40 degrees Celsius) or higher — a condition most common in the summer months. "Some common symptoms of heat exhaustion include high body temperature, nausea, altered mental state, changes in sweating patterns, rapid breathing and severe headache. While heat exhaustion is preventable and rarely life-threatening, untreated heatstroke can quickly damage your brain, heart,

kidneys, and muscles. The damage worsens when treatment is delayed, increasing the risk of serious complications or death. If a person has symptoms of heat exhaustion, it is important to seek immediate medical care, especially if the situation does not improve in an hour,"

My personal appeal to all Local Branch President / Secretaries.

- (1) Have a strong bonding with Specialty Associations. Organize more & more programmes in collaboration with them.
- (2) Ensure "**Beti Bachavo Beti Padhavo**" drive and organize more Community Programmes; keeping this drive in mind.
- (3) Please actively implement "**Aao Gaon Chale**" Programme. Try to reach & serve more & more Rural Patients.
- (4) Do proactive effort for "**Membership Drive**" and bring more and more Young Doctors under umbrella of IMA.
- (5) Organize Community Activities like "Blood Donation Camp", "Pledge for Organ Donation", Awareness Programmes on Cancer, Programmes on "TB Eradication", Prevention of Bliness", Awareness Programmes on Lifestyle Disease, Use & misuse of Social Media, Prevention of Obesity in Children & Adolescents, Awareness Programme on Adult Vaccination etc.

Your Constructive suggestions and feedback is always welcome.

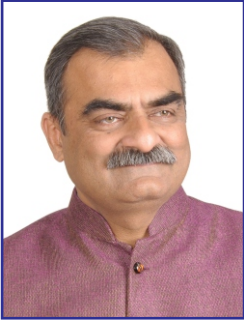
We appreciate all branches and Women Doctors of our Association; for their active participation & organizing many programmes for the benefit of females on Auspicious Occasion of "International Women's Day" celebrations; on 8 March 2022.

At the End,

"Every time we fall and get up, We are one step close to Success,
Even failures make us move Forward, so don't be afraid of Failures.

"TOGETHER WE WILL ACHIEVE".

Dr. Paresh M. Majmudar
(President, G.S.B.,I.M.A.)



HON. STATE SECRETARY'S MESSAGE

Dear Members

Health refers to the complete physical, mental and social well being of a person. Post Covid all our parameters have gone haywire and we are caught up in the turmoil where every other person is on tenterhooks.

First celebrated in 1950, World Health Day symbolizes the importance of Health. It is organized to celebrate the most important aspect of our existence and says "Health is Wealth".

Our world is an unequal one. Some people have better access to health services than others. But our goal is to provide better health services to all people in society who are deprived of the basic amenities and services.

We aim to progress ahead and let us pledge to provide better medical and health services to the lower strata of society and alleviate their suffering which retrospectively improves their overall living conditions.

Health care today is often characterized by mediocre quality, poor safety, and high costs. Though change usually comes slowly, the Covid-19 pandemic has demonstrated that it is possible to rapidly retool our systems if there is a strong enough stimulus.

The sudden emergence of the Covid-19 epidemic has highlighted the gaps in accessibility, sustainability and equity of the medical system across the world. It has literally opened up a Pandora's box. The problems in our health care systems include subpar quality and patient safety, a misplaced focus on acute care rather than on prevention and population health, inadequate person centeredness, and unsustainable cost.

Current healthcare systems often can't effectively involve patients and their families in the care process or provide empathic care. Preventable harm to patients is all too common both inside and outside hospitals, and clinical practices are often not evidence based. Economic sustainability with equitable access to health services is elusive, particularly in developed countries.

With growing consumerism and people becoming more knowledgeable and active in healthcare the focus has dramatically shifted to preventive healthcare. Change is inevitable and

requires a major redesign. The healthcare industry is facing a major transformation creating a burning platform for providers, insurers, consumers and policy makers. Six key areas that will collectively transform the existing health system from treatment-based reactionary care to prevention and well-being are **data sharing, interoperability, equitable access, empowered consumers, behaviour change, and scientific breakthrough.**

With advances in digital healthcare technology like artificial intelligence, VR/AR, 3D printing, robotics and nanotechnology expected to transform how patients are treated in the coming years, the emphasis is surely going to be more patient centric and personalized.

Varied new age multidisciplinary teams like data analysts, data scientists, research analysts, etc will aid the specialists and doctors in providing comprehensive and sustainable healthcare at the doorstep of each and every patient. Care of the patient is expected to move from hospitals to the community and specifically to the home.

It is in this scenario that the future generation in medicine is expected to brace for fundamental changes. New specialities will require new work forces. The present-day youth is best ordained to adapt themselves and realise the potential of the new emerging trends globally.

Health systems represent complex dynamics and need to adapt based on the change at hand and the system characteristics. It clearly indicates that the new age doctor has to rely more on augmented reality, surgical navigation and tele-mentoring to deliver disease management.

The future in health care systems is more linear based – from laboratory to clinical trials to clinical practices. The onus is on the coming generation to maximally utilise their potential and available resources to delve into research and analysis and make the health care system that much more productive and personalized.

Dr. Mehul J. Shah
(Hon. State Secy., G.S.B.,I.M.A.)

FROM THE DESK OF EDITORS



Dear friends,

Season's Greetings !

Because of some technical problems, Gujarat Medical Journal (GMJ) is published three months late, instead of December 2021, in March 2022. We regret for that.

We are thankful to all the central council members of GSB IMA for putting their faith, trust and confidence in us and giving the charge of prestigious Gujarat Medical Journal (GMJ) for this year. On our side, we promise to see that the faith and trust that is put in us is full filled and for that, we shall try our best.

Here, we want to tell our members about the procedure that we are adopting in selection of an article for GMJ. We ask the author to send the article on CD, and three physical copies, of which one copy bears names, addresses, etc., of authors but two other copies, don't have any name or address of authors, they contain only the material of the article. On receiving this our office clerk puts code number on it. Articles are known from its code number only. GMJ editor is given the copy which doesn't have the name, etc. of the author. And editor then sends the said article for review to a retired professor or HOD or having that level of expertise in the subject (whom we call "referee" or "reviewer"). So the reviewer also doesn't know about the author. This procedure is adopted since years and we shall continue that.

Our country and particularly, Gujarat has entered in the field of medical tourism. People from developed and under developed countries come here for treatment and we provide world best treatment to them at a cheaper rates than that is available in developed countries. Our hospitals and expertise are world class and that pushes the medical tourism in Gujarat far ahead. From our own domestic population also we get large number of patients. Now we have more than two dozen medical colleges (and few new will start functioning from next year). Many of them are in smaller towns also. That will help us in collecting data from urban and rural areas. This provides opportunities for research to our doctors. Now we have better infrastructure facilities for data collection and access to world data, for comparison. It has provided a big boost to research work in our state. We appeal our colleagues to send their research articles and papers for publication in GMJ. This will help our other colleagues and also government in handling and controlling certain diseases. Government will also be able to determine where more efforts are required.

Without making any compromise with our laid down policy, we have made all the efforts to make GMJ more informative, more interesting and more popular so that large number of our colleagues read it and utilize the knowledge and information provided in it. For this, we welcome your suggestions and comments also.

We have created our own online article submission and management portal at gmjonline.in, which is ready to be operational. We prepared it with use of OJS software.

The requirement for DOAJ Indexation is completed and within short time we shall apply for that also. By the time we are indexed with Index Copernicus International.

Our sincere thanks to GSB President Dr. Paresh Majmudar and Hon. Secretary Dr. Mehul Shah for encouragement and suggestions, and giving us free hand in publication of this journal. We are grateful to them. We are also grateful to GSB past presidents Dr. Jitubhai Patel, Dr. Mahendrabhai Desai and Dr. Bipinbhai Patel for their guidance and help. How can we forget IMA GSB past president Dr. Yogendra Modi for his help, guidance and support ? Dr. Urvesh Shah, Dr. Chinmay Shah, Dr. Ashish Bhojak, Dr. Divyeshkumar Panchal and their team worked very hard for online platform & try to getting our journal at par with the requirement of NMC norms.

With regards,

DR. KAMLESH B. SAINI

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Hon. Secretary-IMA-GSB-GMJ

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OBITUARY

IMA-GSB Members (Corona Warriors) Who Lost Fight against COVID-19



Dr. Anilbhai J. Joshiyara

(24/04/1952 - 14/03/2022)

- **M.B.B.S., M.S. Surgeon, B. J. Medical, 72 Batch**
- **Bhiloda M.L.A. : 1995 - 2022**
- **Ex. Health Minister, Govt. of Gujarat**
- **Ex. Civil Surgeon, Bharuch**

Diagnostic Features Of Tuberculous Meningitis: A Cross Sectional Study**Dr. Moin Sheth***, **Dr. Bhupendra Shah****, **Dr. Manisha Panchal******Junior resident, **Assistant Professor, ***Associate Professor, Department of Respiratory Medicine
GMERS Medical College, Himatnagar, Gujarat**KEY WORDS** : Tuberculous Meningitis**ABSTRACT**

Background: Tuberculous meningitis (TBM) is a common central nervous system infection however it is difficult to diagnose as findings are non-specific. Hence we decided to determine if, among patients with chronic meningitis syndrome, the following are associated with the diagnosis, new-onset seizures, focal neurologic deficit; pulmonary tuberculosis (PTB) on chest X-ray, cerebrospinal fluid (CSF), pleocytosis with lymphocytic predominance; decreased CSF glucose; increased CSF protein.

Methods : Adult patients with suspected TBM were enrolled after informed consent was obtained. Baseline physical examination and diagnostic tests including CT scan of the head with contrast and CSF analysis for acid fast bacilli (AFB) smear, TB culture and cryptococcal antigen detection were done and results collected. Definite TBM was defined as positive AFB smear or positive TB culture or positive basal meningeal enhancement on CT contrast study. Logistic regression was done to determine which were associated with a diagnosis of TBM.

Results : 91 patients were included. Using the gold standard criteria mentioned above, 44 had definite TBM; but if subsequent clinical course and response to anti-Koch's therapy are considered, 68 had a final diagnosis of TBM. After logistic regression was performed, only abnormal CSF (the combination of CSF pleocytosis with lymphocytic predominance, decreased CSF glucose, and increased CSF protein) was associated with the diagnosis of TBM.

Conclusion : In patients with chronic meningitis syndrome, only abnormal CSF was associated with the diagnosis of TBM.

BACKGROUND

Tuberculous meningitis (TBM) is the most dreaded manifestation of tuberculosis, and is a common infection of the central nervous system (CNS) especially in developing countries like the India, where tuberculosis is highly endemic. The incidence follows that of pulmonary tuberculosis, and is associated with high mortality and morbidity

In a large-scale epidemiological study of extrapulmonary tuberculosis in the United States, CNS involvement was noted in 5-10% of extrapulmonary tuberculosis cases, with more recent CDC data in 2019 indicating that 6.3% of extrapulmonary cases (1.3% of total tuberculosis cases) involve the CNS.

TBM is the most common primary CNS infection in adults in the country, accounting for 28.9% of all cases of primary CNS infections

In the GMERS General Hospital, Himatnagar the case fatality rate for CNS infections is 10%, and prognosis depends on how soon a diagnosis is made and appropriate therapy is started.

The diagnosis of TBM remains to be difficult. As with other forms of TB the gold standard is isolation of the organism through culture or detection of its presence by acid-fast staining. However the yield from acid-fast staining and culture remains to be very low, probably because of the low concentration of bacilli in the cerebrospinal fluid (CSF). The author's own series of 63 cases had a positive culture yield in only 3 of these. Molecular methods, such as polymerase chain reaction (PCR)-based diagnostic techniques, have begun to be applied in the local setting, but are relatively expensive, control. Ultimately clinicians still rely on indirect evidence of TBM, such as the changes in the cerebrospinal fluid, as well as the absence of another

Correspondence Address : **Dr. Moin Sheth**Department of Respiratory Medicine, GMERS Medical College, Himatnagar, Gujarat
E-mail : drmoinsheth@gmail.com

likelier diagnosis. Hence the search continues for a reliable, accurate, yet easily performed and inexpensive diagnostic test.

Due to the unsatisfactory nature of current diagnostic methods, some have formulated clinical decision rules to determine the likelihood of a diagnosis of TBM using only clinical and simple laboratory findings. Thwaites et al. [1] compared the clinical and laboratory features of 251 Vietnamese adults with either tuberculous or bacterial meningitis. Five features were independently associated with a diagnosis of tuberculous meningitis: age, length of history, white blood cell count, total cerebrospinal fluid (CSF) white cell count, and CSF neutrophil proportion. However this study included patients with bacterial meningitis, which is often not an important differential diagnosis in patients with TBM. More recently, Moghtaderi et al. [5] retrospectively compared clinical and laboratory features in 68 Iranian patients with TBM and 123 cases of acute bacterial meningitis. Disease duration of ≤ 5 days, age over 30 years, CSF leukocytosis and lymphocytosis were independent predictive factors for a diagnosis of TBM.

The common limitation of these researches is that not enough patients with a chronic meningitis syndrome were included in their patient populations. Patients with TBM were usually compared to patients with acute bacterial meningitis, when clinically this problem is not often encountered. It is frequently more crucial to differentiate between the different causes of a chronic meningitis syndrome, such as cryptococcal meningitis. Tests to rule out this important differential diagnosis were apparently not carried out in the above studies mentioned. These shortcomings are addressed in the present study.

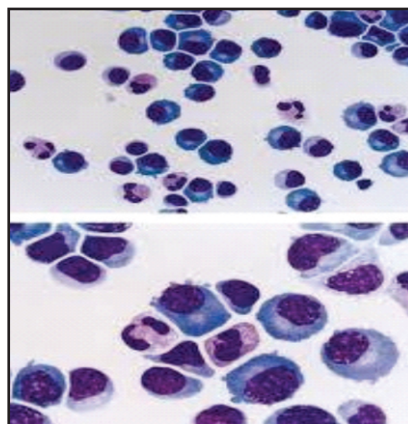
While the ideal diagnostic test is still to be developed, clinicians need to know which features are associated with the diagnosis of TBM, so that appropriate therapy can be started early, and the toxicities of unnecessary treatment can be avoided, hence improving the likelihood of a good outcome for patients with this devastating illness. The results of this study will hopefully contribute to determining which clinical and simple laboratory features are associated with the diagnosis in the local setting.

This study aimed to determine if the following clinical and laboratory features are associated with a diagnosis of definite TBM in patients with chronic meningitis syndrome: new-onset seizures; focal

neurologic deficit; (+) PTB on chest X-ray; CSF lymphocytic pleocytosis (pre-dominance of lymphocytes rather than neutrophils, which is more characteristic of a chronic infection such as TBM, as in Figure 1); decreased CSF glucose; increased CSF protein.

METHODS

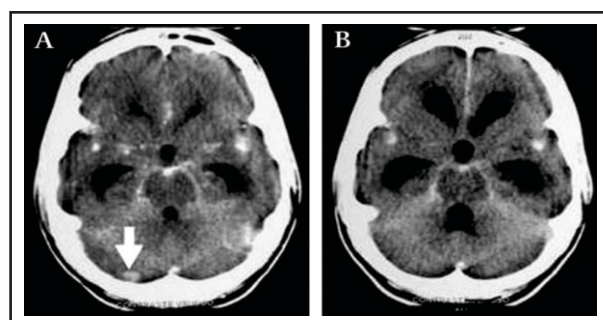
Fig. 1 : CSF pleocytosis with lymphocytic predominance in abnormal CSF smears



This is a prospective cross-sectional validity study carried out at the GMERS General Hospital, Himatnagar. The operational definitions adopted for this study are as follows:

- A. Definite Tuberculous meningitis (TBM):** Any patient whose cerebrospinal fluid (CSF) is positive for AFB smear or positive for TB culture or with basal meningeal enhancement on CT head contrast study (Figure 2).
- B. Chronic meningitis syndrome:** Any patient with 7 days or more history of any 2 of the following: headache (as subjectively reported by the patient or family member); fever (any subjective report of increased body temperature); sensorial change.
- C. Sensorial change:** change in the level of

Fig. 2 : CT scan of head showing basal meningeal enhancement on contrast study. Arrow points to a tuberculoma



sensorium from normal awake to decrease (drowsiness/stupor/coma) or increase (delirium/restlessness).

- D. New-onset seizure:** development of any type of seizure since the start of the patient's present illness.
- E. Focal neurologic deficit:** development of any of the following since the start of the patient's present illness: dysphasia, dyspraxia, agnosia, dyscalculia, left-right disorientation, cranial nerve deficit such as anosmia, dysarthria, weakness of one or more limbs, sensory deficit in one or more limbs, dysmetria, ataxia.
- F. Pulmonary TB:** chest X-ray interpreted as pulmonary TB by a radiologist.
- G. Basal meningeal enhancement on CT head contrast study:** marked contrast enhancement outlining the basal cisterns on head CT, as interpreted by a radiologist.
- H. CSF pleocytosis with lymphocytic predominance:** presence of more than 50 white cells/mm³ on microscopic examination of the CSF, with more lymphocytes than polymorphonuclear cells (Figure 1).
- I. Decreased CSF glucose:** value of CSF glucose 50% or less than simultaneous serum glucose determination.
- J. Increased CSF protein:** value of CSF protein more than the upper limit of normal of the performing laboratory's reference values, i.e. > 0.45 mg/dl.

K. Abnormal CSF: presence of all 3 of the above CSF findings (CSF pleocytosis with lymphocytic predominance + decreased CSF glucose + increased CSF protein).

Prior to carrying out this study, ethical approval was obtained from the Research Implementation and Development Office of the GMERS General Hospital, Himatnagar

Any adult patient with any two of headache, fever, or sensorial change, of at least 7 days duration, and without any other apparent etiology of the illness, was considered to have chronic meningitis syndrome and included in the study after appropriate informed consent was obtained. The following baseline diagnostic tests were performed on all enrolled patients: cranial CT scan with and without contrast; chest X-ray; and lumbar puncture for CSF analysis. Aliquots of the CSF obtained were sent for the following examinations: 2-3 cc for AFB smear and TB culture (Bactec method), 2-3 cc for routine bacteriologic Gram stain & culture, and 1-2 cc for India ink stain & cryptococcal latex agglutination test (CALAS). Patients were treated according to the results of the above examinations, and the best clinical judgment of the attending physician. Data on the clinical outcome and final etiologic diagnosis upon discharge were collected.

All data were entered using Excel software in an Excel file. Descriptive statistics for demographic variables were calculated; crude odds ratios for the presence of each of the above clinical features were then obtained, and logistic regression was performed.

Table 1 : Final Diagnosis in 91 study patients

Final Diagnosis	Frequency
TB meningitis	68 (74.7)
Bacterial meningitis	6 (6.6)
Viral encephalitis	6 (6.6)
Septic encephalopathy	3 (3.3)
Cryptococcal meningitis	2 (2.2)
Metabolic Encephalopathy	2 (2.2)
Hypoxia	1 (1.1)
Normal pressure hydrocephalus	1 (1.1)
Subarachnoid hemorrhage	1 (1.1)
No final diagnosis	1 (1.1)
Grand Total	91 (100%)

Table 2 : Univariate analysis of potential factors associated with a diagnosis of definite TBM; definite TBM = 44; not definite TBM = 47

Factor	(+) in definite TBM (N=44)	(-) in definite TBM (N=44)	CRUDE ODDS RATION	95 % C.I.	P value
New-onset seizure	14	13	1.04	0.38-2.86	0.93
New-onset neurologic deficit	24	21	0.45	1.19-2.93	0.76
Presence of PTB	15	10	1.72	0.60-4.98	0.26
Lymphocytic pleocytosis	32	18	3.56	1.32-9.74	0.005
Decreased glucose	33	21	3.00	1.10-8.30	0.017
Increased protein	40	30	4.89	1.12-24.43	0.015

Table 3 : Univariate analysis of potential factors associated with definite TBM; definite TBM = 44; not definite TBM = 47

Factor	(+) in definite TBM (N=44)	(-) in definite TBM (N=44)	CRUDE ODDS RATION	95 % C.I.	P value
New-onset seizure	14	13	1.04	0.38-2.86	0.93
New-onset neurologic deficit	24	21	1.14	0.45-2.93	0.76
Presence of PTB	15	10	1.72	0.60-4.98	0.26
Abnormal CSF	26	13	3.78	1.44-10.04	0.002

RESULTS

A total of 91 adult patients with chronic meningitis syndrome were enrolled in the study from July 2019 to January 2022, with an age range of 19-76 years old (mean 35.3 years old, s. d. 14.0) and male: female ratio of 1.53:1. Of these 91 patients, 44 were diagnosed to have definite TBM according to the composite reference standard (positive for AFB smear or positive for TB culture or with basal meningeal enhancement on CT head examination, as in Figure 2).

If subsequent clinical course, follow-up data, results of other laboratory examinations, and response to anti-Koch's therapy are taken into account, 68 had a final diagnosis of TBM upon discharge based on the attending physician's clinical assessment, while 22 had other alternative diagnoses (Table 1).

To find out which clinical and laboratory features were associated with a diagnosis of TBM, we performed univariate analysis of the data using simple logistic regression (Table 2). Taken individually, lymphocytic pleocytosis, decreased glucose, or increased protein, would seem to be significant predictive factors of a diagnosis of TBM.

Univariate analysis was then repeated for all the four features (abnormal CSF, new-onset seizure, new-onset deficit, and (+) PTB on CXR.) The results are shown in Table 3. The new variable, abnormal CSF is now the only factor which turns out to be significant after univariate analysis.

After logistic regression, however, these 3 factors were no longer significant. But since these 3 CSF features were initially significant on univariate analysis, and in clinical practice they are usually considered together, we decided to combine them to determine if this new variable would be significant after multiple regressions. Accordingly, the new variable was named "abnormal CSF," and a patient was classified to have abnormal CSF if the patient had all 3 CSF features (lymphocytic pleocytosis, decreased glucose, increased protein).

Univariate analysis was then repeated for all the four features (abnormal CSF, new-onset seizure, new-onset deficit, and (+) PTB on CXR.) The results are shown in Table 3. The new variable, abnormal CSF is now the only factor which turns out to be significant after univariate analysis.

After logistic regression analysis, abnormal CSF remained significant (Table 4). For this overall logistic regression model, the likelihood ratio statistic is 8.80, with a p-value of 0.06. Given this result of near significance at an alpha level of 0.05, it would be helpful to proceed in assessing the effect of the predictor variables when taken together in the diagnosis of TBM.

In order to further assess the significance of abnormal CSF as well as the other factors, the likelihood ratio test was performed to identify factors associated with the diagnosis of TBM. At the end of the LR test only abnormal CSF was found to be a significant associated factor for the diagnosis of TBM. Since only one factor was significant, an ROC curve was no longer constructed; instead the validity parameters of abnormal CSF as a diagnostic test for definite TBM were calculated. The results, shown in Table 5, reveal only a moderate sensitivity and specificity, and likelihood ratios:

DISCUSSION

In this study, clinical and widely available laboratory features were collected from 91 patients with a chronic meningitis syndrome to find out which of these were associated with a diagnosis of TBM. Based on these test results (positive for TB culture or AFB smear or basal meningeal enhancement on contrast CT scan of the head), only 44 would fulfil the criteria of definite TBM.

If only growth on TB culture or positive AFB smear were used as the gold standard, then this number would be even lower (4/91). The final discharge diagnosis was TBM in 68 of the 91 cases, whereas there were other alternative diagnoses in the other cases. Other CNS infections were among the next most common final diagnoses: bacterial and viral meningitis (6.6% each) and cryptococcal meningitis (2.2%). Non-infectious causes (6/91) were also among the differential diagnoses, such as metabolic encephalopathy, hypoxia, and subarachnoid hemorrhage, but these are usually easily ruled out on the basis of history, PE, and simple laboratory examinations.

Due to the low yield of conventional TB culture or AFB smear in our setting, we chose to include basal meningeal enhancement on CT contrast study of the head as part of the gold standard criteria for TBM. Several authors have determined the validity of this approach: Kumar (1996) compared the CT findings of 94 children with TBM with those of 52 children with pyogenic meningitis, and concluded that basal meningeal enhancement, tuberculoma, or both, were 89% sensitive and 100% specific for the diagnosis of TBM. Przybojewski^[5] showed that the criteria most clinically useful were the Y-sign, linear enhancement, contrast filling the cisterns, and asymmetry, due to their high likelihood ratios.

Table 4 : Overall Logistic Regression of possible predictive factors of TBM

Factor	CRUDE ODDS RATION	95 % C.I.	P value
New-onset seizure	1.49	0.54-4.07	0.44
New-onset neurologic deficit	1.17	0.47-2.90	0.72
Presence of PTB	2.06	0.74-5.72	0.17
Abnormal CSF	3.27	1.30-8.22	0.01

Table 5 Validity parameters of abnormal CSF for the diagnosis of TBM

Parameter	Value	95% C. I.
Sensitivity	0.57	0.42-0.71
Specificity	0.69	0.55-0.81
Likelihood ratio (+)	1.89	1.12-3.20
Likelihood ratio (-)	0.61	0.41-0.91

Due to the shortcomings of the laboratory examinations used as the gold or reference standard in this study, an alternate reference standard could have been used, such as a consensus panel diagnosis, wherein at least two experts would examine each chart and arrive at a consensus as to whether each patient did indeed have TBM. Important data such as the response to anti-Koch's medications could have been taken into account for the panel to arrive at a diagnostic decision with a confident level of certainty. However the panel would have to be blinded to the results of the tests being studied as possible predictive factors, lest incorporation bias come about and artificially inflate the odds ratios.

It is unfortunate that only abnormal CSF was found to be associated with the diagnosis of TBM, in contrast to previous studies. Thwaites, Kumar, Sunbul, Youssef, and Moghtaderi [1,6-9], cited in the review of literature. This may be because of differences in the study population. In the earlier studies, the population was of patients presenting as a meningitis syndrome, whether acute or chronic; cases of TBM were compared with other bacterial meningitides, but arguably this would not be useful in an actual clinical setting because it is not often that clinicians have to discriminate between TBM and acute bacterial meningitis. More often the dilemma is to distinguish between TBM and other chronic meningitides such as cryptococcal meningitis. Also, the population in the present study would be more relevant for local clinicians, as the clinical presentation of TBM in the country may be different from places such as Vietnam and India, places with high HIV prevalence, where the previous studies were carried out. Coinfection with HIV increases the risk of TBM and modifies the clinical presentation: usually patients would present with acellular CSF and high AFB loads [6].

This study shows that diagnostic rules and prediction models which were developed in one setting may not necessarily be relevant in another setting, as the factors which were found relevant in previous studies turned out not to be significant in the local setting, most probably due to differences in the study population.

This study also shows that an abnormal CSF profile (lymphocytic pleocytosis + decreased glucose + increased protein) has a moderate sensitivity and specificity, in fact comparable with more advanced molecular methods such as PCR, and a definite improvement over the current gold standard of AFB smear or TB culture.

Hence in the setting of a chronic meningitis syndrome, clinicians confronted with this finding may be reasonably confident of the diagnosis of TBM, and use the associated likelihood ratios to arrive at a decision as to whether to order more tests or proceed with anti-Koch's treatment. Also, clinicians confronted with these findings should first rule out those conditions which have entirely different therapies, such as cryptococcal meningitis and partially-treated bacterial meningitis, by doing the appropriate laboratory exams. In those patients where it is not immediately evident what the etiologic organism is, then the best course would be to treat for TBM and start anti-Koch's medications by default, as this is the most prevalent etiology of a chronic meningitis in the local setting, and then to also institute additional treatment for those other conditions which the clinician is ruling in. He may then modify his subsequent management based on the response to therapy, and a repeat of the pertinent laboratory exams where appropriate.

There are some limitations to this study:

- 1) The desired sample size was not achieved within the time frame of this study; conceivably some factors would turn out to be positively predictive if a larger population were studied;
- 2) There is subjectivity involved in assessing for the presence of basal meningeal enhancement on CT head contrast study; also inter-rater and intra-rater variability was not assessed. This would have affected the performance of the gold standard test.
- 3) Related to this, the yield of the conventional gold standard tests, which are AFB smear and TB culture, is still very low. If these were the only tests considered as part of the composite gold standard, then it would have been useless to proceed with the logistic regression. Some techniques that may be used to improve the yield of AFB staining include staining the clot that forms in standing CSF and spinning down the CSF sediment onto a slide for microscopic examination. In 1979, Kennedy and Fallon [10] showed that staining multiple samples of CSF enhanced the sensitivity to 86%.
- 4) Finally, the presence of HIV co-infection was not tested. As mentioned earlier, a high rate of co-infection with HIV may affect the clinical presentation and affect the choice of clinical and laboratory features to be studied.

CONCLUSIONS

Thus we conclude that only abnormal CSF (lymphocytic pleocytosis + decreased glucose + increased protein) is associated with a diagnosis of TBM in patients with a chronic meningitis syndrome.

We recommend that these results be validated in a larger sample of patients with chronic meningitis; also that the current gold standard be improved. The yield of AFB smear and culture should be improved by proper training of medical technologists to do more meticulous examination of a larger sample, while new and more sensitive methods for TB culture can be developed.

At the same time more definite and objective criteria for basal meningeal enhancement on contrast CT scan of the head should be developed, while consistency and inter- and intra-rater variability among readers should be checked.

Lastly HIV co-infection should be checked, now that the prevalence of HIV in the country is reported to be increasing and may perhaps affect the clinical presentation and prevalence of TBM. While a definitive

diagnostic laboratory exam is not yet a reality, we believe that a consensus definition of TBM should be formulated by clinicians and experts, and this will ultimately be most useful in coming up with a definition of TBM that will be relevant for subsequent researchers and clinicians. The finding of abnormal CSF can greatly aid clinicians and researchers who will opt to use a consensus panel method for determining whether a particular patient has TBM, and greatly aid subsequent management.

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Study of Effect of Ferrous Carboxymaltose on Postpartum Anemia

Dr. Samrudhi Jain*, Dr. Hardi Shukla*, Dr. Ajesh N. Desai**

*Resident Doctor in Obgy, **Professor & Hod in Obgy Department of Obstetrics and Gynecology, Gmers Medical College and Civil Hospital, Sola, Ahmedabad

KEY WORDS : Fcm, Postpartum Anemia, Hemoglobin Level.

ABSTRACT

Background: The incidence of post-partum anemia (PPA) is 14-24%. Treatment of PPA with injectable iron replenishes the iron store. Ferric carboxy-maltose complex (FCM) is an intravenous iron agent designed to be administered in large doses in a short period of time. This study aims to find the efficacy and safety of FCM in treating postpartum anemia. **Materials And Methods :** The present study is a Prospective interventional hospital based therapeutic trial conducted on postpartum anemic women of more than 18 years of age with HB <10gm. Intravenous ferric carboxy-maltose (FCM) was given to the anemic women who has just delivered. Total 500 mg/10 ml in 250 ml of 0.9% normal saline was given over 15-20 min. **Result :** Mean hemoglobin level before intravenous ferric carboxy maltose was 8.1+/-0.4gm% while it was 10.05+/-0.6 gm% after treatment. Hb level, Serum ferritin, MCV and MCHC improved after 2 weeks of treatment. **Conclusion :** FCM was well tolerated and effectively increased mean hemoglobin levels in postpartum women. The duration of hospital stay also shortened and there were no serious side effects noted with the use of FCM.

INTRODUCTION

Iron deficiency is the most prevalent nutritional deficiency amongst women in the reproductive age group.^[1] Effects of iron deficiency during pregnancy and post-partum period include – fatigue, cardio-respiratory problems, increased chances of infection, reduced immunity, lactation failure, increased post-partum depressive episode, and post-partum hemorrhage^[2] WHO estimates that, of the 5,29,000 maternal deaths occurring every year, 1,36,000 (25.7%) takes place in India, where two-thirds of maternal deaths occur postpartum, PPH being the leading cause of death.^[3]

Iron therapy is the treatment of choice in treatment of postpartum anemia. It can be given by oral or i.v. route. Intravenous (IV) low-molecular-weight iron dextran has been associated with an incidence of anaphylaxis or anaphylactoid reactions as high as 1.7%.^[4-5] The high incidence of these serious AEs is believed to be caused by the formation of antibodies to the dextran moiety. Newer parenteral iron products (FCM) do not contain the dextran moiety, and the incidence of anaphylaxis with these products is markedly lower.^[5-6] Ferric carboxy maltose (FCM) is a Type I polynuclear iron (III)-hydroxide carbohydrate complex that produces a slow and controlled delivery of the complexed iron to endogenous iron binding sites. FCM is cost effective with other positive benefits of fewer hospital visits and

improved patient compliance.^[7] This study assessed the efficacy and safety of intravenous FCM in the post-natal women with iron deficiency anemia and to see rise in Hb level after 2 weeks of treatment with FCM.

INCLUSION CRITERIA

Post-partum women >18yrs age with Hb <10gm/dl.

EXCLUSION CRITERIA

Women with

1. Chronic Disease
2. Immunological Reaction
3. Allergy to Iron Compounds
4. Requiring Blood Transfusion
5. Serious Medical Disease.

METHOD

This was an observational study held over a period of 3 months (May 2019 to July 2019) in department of obstetrics and gynecology in GMERS MEDICAL COLLEGE & CIVIL HOSPITAL, SOLA.

After explaining about the requirement of administering FCM, its adverse effects, written informed consent were obtained from all the women and attenders. Ethical guidelines were followed. Data of the questionnaire and outcome of blood tests were computerized and analyzed in Microsoft excel. Iron deficiency was diagnosed on

Correspondence Address : Dr. Samrudhi Jain

C/2, Apollo Park Society, Opp. Chandnamani Hospital, Girdharnagar, Ahmedabad-4.
E-mail : samrudhi.jain5@gmail.com

parameters like complete blood count (CBC), peripheral blood smear, packed cell volume (PCV), and serum ferritin.

Intravenous ferric carboxy maltose (FCM) was administered to the anemic postpartum women. They are available as ampoules of 10 ml containing 500 mg of elemental iron.

Dose calculation/total drug infusion for ferric carboxy maltose

The cumulative dose required for Hb restoration and repletion of iron stores is calculated by the following Ganzoni formula:

Cumulative iron deficit (mg) = body weight in kg x (Target Hb - Actual Hb g/dL) x 2.4 + iron storage depot (mg).

A maximum dose of 1000 mg/10 ml in 250 ml of 0.9% normal saline infused over 15-20 min not more than once a week. Repeat hemoglobin level was done 15 days after administering Intravenous ferric carboxy maltose (FCM). Measurement of Hemoglobin was done with Cyan-meth Hemoglobin method. Any side effects or adverse events post injection were also noted. All patient receiving FCM were given folic acid supplementation.

RESULT

A total of 120 postpartum anemic women who delivered in our department from May 2019 to July were included in the study.

Table 1: Distribution of patients according to demographic and obstetric profile

AGE	No.	%
<20	24	20
20-25	40	33.3
26-30	38	31.7
>30	18	15
PARITY		
PRIMI	40	33.3
MULTI	80	66.67
MODE OF DELIVERY		
LSCS	70	58.3
VAGINAL	50	41.67

Table 2 : Distribution based on severity of anemia

SEVERITY OF ANEMIA	No.	%
MILD (9.1-10gm/dl)	35	29.17
MODERATE (7.1-9gm/dl)	68	56.67
SEVERE (<7gm/dl)	17	14.17

Table 3 : Laboratory parameters before and after FCM administration.

PARAMETERS	BASE	AT 2 WEEKS	P VALUE
HB	8.1+/-0.4	10.05+/-0.6	<0.001
S. FERRITIN (ng/dl)	17.23+/-3.6	88.67+/-10.54	<0.001
MCV (fL)	68.23+/-2.7	72.45+/-3.25	0.0014
MCH (pg/cell)	27.36+/-2.64	25.97+/-3.21	0.118
MCHC (gm/dl)	25.47+/-2.65	29.75+/-2.05	<0.001

Table 4 : Assessment of efficacy of FCM based on severity of anemia

Patient Categories	N	Baseline Hb (gm/dl)	Hb after FCM treatment (gm/dl)	Mean change in Hb from baseline (gm/dl)	'P' value Vs baseline
Mild anemia	35	9.48 ± 0.27	10.9± 0.70	1.42± 0.73	<0.001
Moderate anemia	68	8.34 ± 0.68	10.46 ± 0.76	2.12± 0.86	<0.001
Severe anemia	17	6.54 ± 0.36	9.5 ± 0.91	2.96 ± 1.05	<0.001

Table 5 : Adverse reactions of FCM

DESCRIPTION	No.
Local Reaction	40
Systemic Reaction	05
TOTAL	45

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The hospital stay was also reduced with an average stay of 3.21+/-0.21 days.

DISCUSSION

In the present study, average hemoglobin level before intravenous ferric carboxy maltose was 8.1± 0.4g% while it was 10.05 ± 0.6g% after treatment. There was mean rise of 1.91 g% in two weeks. Rise in Hb level was seen in all patient irrespective of the severity of anemia but it was maximum in patient with severe anemia i.e. Hb <7 and was statistically significant after FCM administration. The treatment of iron deficiency anemia in patients who has just delivered after administering any form of iron aims at elevating serum Hb levels by 2.4 – 4.6 g/ dl. There are various studies which suggests increase of Hb level 2-3 g/dl within 4-12 weeks of oral iron therapy.

Van Wyck et al.⁽⁸⁾ reported increase of Hb by 2 g/dL within 7 days and 3 g/dL in 2-4 weeks in patients receiving FCM. In the study by Seid et al. FCM achieved a Hb rise of 3 g/dL or more, faster (median 15 vs. 28 days; P < 0.0001) than ferrous sulfate group. Seid et al. reported that the ferritin levels were replenished at 42 day in the patients receiving FCM, but not in the oral iron group (238 ng/mL vs. 21 ng/mL; P < 0.0001).⁽⁹⁾ Breyman et al. reported mean ferritin levels increased from 39.9 µg/L at baseline to 568.2 µg/L at week 1 and 161.2 µg/L at week 12. In contrast, patients in the control group showed only a marginal increase of ferritin levels (32.4 µg/L to 34.8 µg/L at week 2 and 43.3 µg/L at week 12

In our study the total no. of cases of adverse effect noted were 45. This suggests that FCM was well tolerated and was associated with few local and mild systemic reactions but no serious life-threatening allergic reactions. Most common adverse effects noted were nausea, diarrhea, bloating, abdominal pain, headache and rashes.⁽¹⁰⁾ Serious adverse reactions noted were unrelated to FCM administration.

CONCLUSION

Present study showed FCM is better and more rapid in improving Hb concentration and replenishment of iron store in PPA. Large doses were given in short period of time which not only save hospital resources but also improve patient satisfaction. No serious adverse effect was noted and it was well tolerated.

Original Articles

"Coronary Atherosclerosis"- A Post-Mortem Histopathological study of 7 years

Dr. Amit Agravat*, Dr. Mahesh Vatkiya**, Dr. Kruti Soria***, Dr. Gauravi Dhruva****

*Associate Professor, **M.D. Pathology, ***Resident Doctor, ****Professor and Head of Department, Pathology Department, P.D.U. Medical College, Rajkot.

KEY WORDS : Atherosclerosis, Autopsy.

ABSTRACT

Background : The incidence of coronary heart disease has markedly increased in India over the past few years. Coronary atherosclerosis, the largest cause of morbidity & mortality in developed and developing country.

Aim : To study the prevalence of coronary atherosclerosis cases on histopathology. To study different morphology of coronary atherosclerosis on histopathology. To assess cases according to gender, age and socioeconomic profile.

Material and Methods : Prospective and retrospective study of 7 years was designed to evaluate common coronary atherosclerosis reported on autopsy viscera at histopathology department from August 2014 to August 2021.

Result : The study comprises the cases in the age group between 10 to 90 years. Both side coronary vessels involvement is more common than single vessels involvement. The most common type of atherosclerosis seen was Grade 2.

Conclusion : coronary atherosclerosis was most commonly diagnosed in the age group of 41 – 50 years and have a male preponderance. Urban population more affected than rural. Most common observed complication is myocardial infraction.

INTRODUCTION

Coronary artery disease (CAD) is a multifactorial disease usually affecting people in "middle age." According to the World Heart Federation, 35% of all deaths caused by cardiovascular disease in India occur in that aged 35-64 years.¹ Aging is associated with structural and functional changes of the vessel wall, which result in decreased vascular distensibility and elevated arterial stiffness. Chronic systemic inflammation has been implicated in atherogenesis, and may play a role in destabilizing vulnerable coronary plaques, thereby precipitating acute thrombosis and clinical coronary vessel events.^{2,3}

Atherosclerosis is a pathologically diverse disease with heterogeneous mechanisms of progression. Irreversible atherosclerotic plaques begin with smooth muscle cell-rich lipid pool lesions referred to as pathologic intimal thickening and it is a lipid-driven, chronic inflammatory disease of the vessel wall in which

both innate and adaptive immune responses play a role.⁴ Coronary calcium is a specific marker of atherosclerosis.³ Coronary artery calcification (CAC) is a linear estimate of the total burden of coronary atherosclerosis that highly correlates with autopsy and intravascular ultrasound assessment.^{2,4} Major advances in medical, interventional, and surgical therapy, together with effective secondary prevention, have resulted in extended life expectancy and an improvement in the quality of life of most patients with clinical CAD. Despite these achievements, the prevalence of CAD seems to remain high.⁵

AIMS AND OBJECTIVES

1. To study the prevalence of coronary atherosclerosis cases on histopathology.
2. To study different morphology of coronary atherosclerosis on histopathology.
3. To assess coronary atherosclerosis cases according to gender, age and socio demographic profile.

Correspondence Address : Dr. Kruti Soria
20, B/H, Yogeshwarnagar, Ravapar Road, MORBI. 363641.
E-mail : soriakruti571995@gmail.com

MATERIALS AND METHOD

Present study of — coronary atherosclerosis”- A postmortem histopathological study of 7 year was carried out in Histopathology Laboratory Department of Pathology, P.D.U. Medical College and Hospital, Rajkot Records maintained in the department post-mortem registry were retrieved manually. This number was be used as population (denominator) for further calculation.

Prospective and Retrospective study of 7 years was designed to evaluate common coronary atherosclerosis reported on autopsy viscera received at Histopathology laboratory from August 2014 to August 2021 time duration. Specimen was received in 10% formalin, twenty times that of the specimen's volume. And were kept for 24 hours in 10% formalin for proper fixation.

PROCESSING OF SPECIMEN

The specimens were fixed in 10% formalin, subsequently dehydration; clearing embedding in paraffin was carried out. Blocks were made, section of 3 micron thickness were cut and stained with Harris Haemotoxylin and Eosin stain. There slides were mounted and microscopy was done subsequently.

PROCEDURE OF STAINING

- Dewax section in xylene giving two changes for 20 mins.
- Hydrate section in descending grade of alcohol, bringing them to water.
- Place in haemotoxylin for 8 to 10 mins.
- Washing in running water for 5 mins.
- Decolorise with 1% acid alcohol.
- Washing with water immediately
- Place in running water for 5 mins
- Place in eosin for 10 sec
- Give 5 dips in running water
- Dehydrate in alcohol
- Mount in DPX

RESULTS

A total of 252 post-mortem hearts were studied. The heart was examined grossly as well microscopically for the presence of coronary atherosclerosis and then graded for morphological type according to the American Heart Association.

Table 1: Year wise distribution of cases.

Years	No. of Cases
2014	30
2015	22
2016	77
2017	23
2018	27
2019	21
2020	27
2021	25
TOTAL	252

According to table no 1, Out of total 252 coronary atherosclerosis cases, 30 cases were reported in 2014, 22 cases were reported in 2015, 77 cases were reported in 2016, 23 cases were reported in 2017, 27 cases were reported in 2018. 21 cases reported in 2019. 27 cases were reported in 2020 and 25 cases reported in 2021.

Table 2: Gender wise distribution of cases.

Gender	No. of cases
Male	191(75.8%)
Female	61(24.2%)
Total	252

According to table no 2, Present study shows prevalence of coronary atherosclerosis among male is 191 (75.8%) out of 252 patients while female having 61 (24.2%) cases of coronary atherosclerosis respectively.

Table 3: Age wise distribution of coronary atherosclerosis cases among different sex group.

Age Range (year)	Male	Female	Total
10-20	04	02	06
21-30	23	08	31
31-40	45	19	64
41-50	54	17	71
51-60	44	08	52
61-70	16	06	22
71-80	02	00	02
81-90	03	01	04
Total	191	61	252

According to table no 3, most common age group in which coronary atherosclerosis diagnosed was between 41-50 years which was 71 cases out of total number of 252 cases and least common age group was 71-80 years.

Table 4: Region wise distribution of cases.

Region	No. of cases
Urban	170(67.5%)
Rural	82(32.5%)
Total	252

According to table no 4, this study shows prevalence of coronary atherosclerosis in urban region more than to rural region, Out of 252 cases 170(67.5%) coronary atherosclerosis cases found in urban region and, 82(32.5%) coronary atherosclerosis cases found in rural region respectively.

Table 5: Histopathological grading of coronary atherosclerosis.

HISTOPATHOLOGICAL GRADING OF CORONARY ATHEROSCLEROSIS	
Grade	Total case (%)
Grade 1	07 (2.7%)
Grade 2	113 (44.8%)
Grade 3	100 (39.7%)
Grade 4	29 (11.5%)
Grade 5	03 (1.2%)

According to table no 5, shows histopathological (microscopy) Grading 2 (44.8%) type coronary atherosclerosis found most cases, and histopathological (microscopy) Grading 5 (1.2%) found least postmortem cases of coronary atherosclerosis , out of 252(100%) of coronary atherosclerosis cases.

Prevalence of coronary atherosclerosis in both artery (left and right coronary artery) found most cases 200 (79.40%), and left coronary artery atherosclerosis found 33(13.1%) cases and right coronary artery atherosclerosis found 19 (7.53%) cases out of 252 cases respectively.

Mild (atheroma thickness) coronary atherosclerosis found in most post mortem cases, among 113(44.8%) cases found out of 252 cases, and least common very mild (atheroma thickness) coronary atherosclerosis found 08 (3.17%) cases, out of 252 cases.

DISCUSSION

There is an alarming increase in the number of deaths due to coronary atherosclerosis in India and this number is expected to escalate rapidly in the next decade. Atherosclerosis is a common phenomenon which is seen with different prevalence in different races. It begins in childhood and progresses through young adulthood to

form the lesions that causes coronary heart disease.⁵

According to table no 6, in present study most common age group affected was 41-60 year. It was correlated with the study given by Yazdi et al⁶, Kumar et al⁷ and Mexico⁸ study.

According to table no 7, Present study was found 75.8% male and 24.2% female affected, were comparable to other study. Bhargava et al⁹ studied 81% males and 19% females affected. In Singh et al 65% were male and 35% female affected. The reason being that as males are bread earners and females usually doing house hold works, which makes the males more vulnerable to accidents, violence and stress. Also males were more indulged in smoking, alcoholism etc. Which are predisposing causes for atherosclerosis.

According to table no 8, in our study most common histopathological observation was grade 2, it was correlated with the study given by Yazdi et al⁶, Virmani et al¹¹, and, study in Mexico⁸ city.

According to table no 9, in our study Single vessel involvement was seen in 20.63%, while both side coronary vessels involvements was seen in 79.40%. Two vessels involvement was the most common in our study. It was correlated with the study given by Yazdi et al, Virmani et al, Kumar S et al.

According to table no 10, Prevalence of coronary atherosclerosis is more common in urban region than rural.

CONCLUSION

Coronary atherosclerosis was diagnosed most commonly in the age group of 41-50 years.

Out of 252 total post mortem cases 191 males showed coronary atherosclerosis and 61 female showed coronary atherosclerosis.

Urban population more commonly affected than rural population and histological grading 2 is most commonly observed microscopically.

This study highlights the importance of atherosclerosis as a cardiovascular risk factor which needs to be screened from young age group. Our study aids valuable data to the literature regarding the morphology of atherosclerotic lesions.

The study of human atherosclerotic lesion is an extremely difficult task in a living subject so autopsy study is the best way to work on it.

Table 6: Comparative study of age wise distribution of coronary atherosclerosis.

Age (Years)	Present study (Aug 2014 - Aug 2019)	Yazdi et al ⁶ (Oct 2007 - Mar 2008)	Kumar S et al ⁷ 2012	Cardiology Research & Practice ⁸ MEXICO city 2014
10-20	2.3%	-	-	-
21-40	37.7%	24%	15%	18%
41-60	48.8%	48%	65%	58%
61-80	9.6%	28%	20%	15%
81-100	1.6%	-	-	9%

Table 7: Comparative study of gender wise distribution of coronary atherosclerosis.

Gender	Male	Female
Present study (Aug 2014 - Aug 2019)	75.8%	24.2%
Bhargava et al ⁹ 2011(Jan - Mar 2011)	81%	19%
Singh et al ¹⁰ 2005(Jan -Dec 2005)	65%	35%
Kumar S et al ⁷ .2012	76%	24%

Table 8: Histopathological observation of coronary atherosclerosis in different study.

Grading	Present study (Aug 2014 - Aug 2019)	Yazdi et al ⁶ (Oct 2007 - Mar 2008)	Virmani et al ¹¹ (Jan 2000 - Dec 2000)	Kumar S et al ⁷ .2012	Cardiology Research & Practice ⁸ MEXICO city 2014
Grade 1	2.7%	1%	2%	15%	1%
Grade 2	44.84%	38%	36%	16%	36%
Grade 3	39.7%	35%	26%	24%	26%
Grade 4	11.5%	30%	30%	40%	34%
Grade 5	1.2%	11%	6%	5%	3%

Table 9: Comparative study of involvement coronary vessels.

Involvement of vessels	Single vessel involvement	Right and left vessel involvement
Present study (Aug 2014 - Aug 2019)	20.63%	79.40%
Yazdi et al ⁶ (Oct 2007 - Mar 2008)	20%	80%
Virmani et al ¹¹ (Jan 2000- Dec 2000)	44%	56%
Kumar S et al ⁷ .2012	50%	50%
Cardiology Research & Practice MEXICO ⁸ city 2014	15%	85%

Table 10: Comparative study of urban/rural distribution of cases.

Urban/Rural	Present study (Aug 2014 - Aug 2019)	Yazdi et al ⁶ (Oct 2007 - Mar 2008)	Virmani et al ¹¹ (Jan 2000 - Dec 2000)	Kumar S et al ⁷ .2012	Cardiology Research & Practice ⁸ MEXICO city 2014
Urban	67.5%	58%	62%	68%	78%
Rural	32.5%	42%	38%	32%	22%

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Study of Medical Disease Affecting Pregnancy other than Pregnancy induced and its Effect on Outcome

Dr. Tushar M. Shah*, Dr. Janki B. Shingadia**, Dr. Bhakti Modi***

*Associate professor & HOU, **3rd year resident, ***1st year resident, B.J. Medical college, civil hospital, Ahmedabad.

KEY WORDS : Medical diseases affecting pregnancy, Neonatal mortality, Maternal mortality

ABSTRACT

Total 100 antenatal patients were selected on basis of history, clinical examination and investigation who came in OPD of department of Obstetrics and Gynaecology B.J. Medical College, Ahmedabad, with various medical conditions between May 2020 to september 2020 And observed till the termination of pregnancy. This study does not include those medical conditions which are pregnancy Induced like pregnancy induced hypertention, Gestational diabetes mellitus, Physiological anaemia etc. Study includes those medical conditions which are already presents before pregnancy or not directly related to the pregnancy. Study shows that highest chances of neonatal mortality among studied diseases is seen in pregnancy with jaundice, HIV, HBsAg, Asthma, Heart disease, epilepsy, TB, UTI, influenza, Typhoid, Dengue, thyroid dysfunction in pregnancy. Highest chances of Maternal mortality among studied diseases is seen in pregnancy with jaundice in pregnancy followed by Heart disease, epilepsy, tuberculosis, influenza and dengue in pregnancy. Where chances of Medically terminated abortion in early pregnancy is seen highest with heart disease in pregnancy followed by and thalassemia minor in pregnancy. Highest chances of Spontaneous Abortion. **Aims and Objectives :** Aim is to study the various medical condition which affects pregnancy and its outcome. **Material and methods :** Total 100 Random antenatal patients were selected on basis of history, clinical examination and investigation who came in OPD of department of Obstetrics and Gynecology B. J. Medical College, Ahmedabad, with various medical conditions between May 2020 to September 2020. **Exclusion Criteria :** this study does not involve those medical conditions which are directly related to the pregnancy which occurs or exaggerates because of pregnancy, for example Pregnancy induced hypertension, Gestational diabetes mellitus, Physiological anemia etc. **Inclusion Criteria :** This study includes medical disorders that women had before they became pregnant (preexisting disorders), such as diabetes or chronic high blood pressure and Disorders that develop during the pregnancy but are not directly related to the pregnancy. 14 cases of cardiac disease, 10 cases of jaundice (viral hepatitis), 8 cases of HbsAg, 8 cases of HIV, 8 cases of urinary tract infections, 8 cases of typhoid, 6 cases of epilepsy, 6 cases of dengue, 5 cases of thyroid disease, 5 cases of asthma, 5 cases of influenza, 5 cases of tuberculosis, 4 cases of renal disease, 4 cases of malaria, 4 cases of chronic hypertension.

INTRODUCTION

- There are a variety of medical disorders which may impact on a mother's health during pregnancy and the puerperium.
- The risk of problems during pregnancy may be increased by Disorders that women had before they became pregnant (preexisting disorders), such as diabetes or high blood pressure.
- Disorders that develop during the pregnancy but are not directly related to the pregnancy.

- Disorders that are more likely to occur during pregnancy, directly related to pregnant state of uterus. This study does not include such diseases.

OVERVIEW OF DISEASE DURING PREGNANCY WHICH ARE NOT RELATED TO PREGNANT STATE :

- Heart disease in pregnancy
- Chronic hypertension in pregnancy

Correspondence Address : Dr. Tushar M. Shah

A-902, Status Tower, Opp. Doordarshan Kendra, Drive-In-Road, Thaltej, Ahmedabad.

E-mail : shah_tushar_v@yahoo.co.in

- Epilepsy in pregnancy
- Renal disease in pregnancy
- Thyroid dysfunction in pregnancy
- Asthma in pregnancy
- Jaundice in pregnancy
- HIV in pregnancy
- HBsAg in pregnancy
- Tuberculosis in pregnancy
- Influenza in pregnancy
- Urinary tract infection in pregnancy
- Dengue in pregnancy
- Typhoid in pregnancy
- Malaria in pregnancy

OBSERVATION AND DISCUSSION

Table -1 : Heart Disease In Pregnancy

	Total (14)	Maternal mortality	Baby with mother	NICU admission	Neonatal mortality
Csection	5	1	3	2	1
Normal delivery	6		5	1	
Abortus	3 (2 MTP 1 spontaneous)				

Effect of Heart Disease in Pregnancy 1

- Abortion
- Intra uterine growth retardation
- Still birth
- Premature labor

Out of total 14 cases of cardiac disease of pregnancy 5 cases are delivered by caesarean section and 6 cases delivered normally, 3 cases aborted.

2 babies out of 5 from caesarean section and 1 baby out of 4 from normal delivery seek NICU admission. 1 maternal mortality occurs on post LSCS

day 1 Cause of death : Sudden cardiorespiratory arrest due to congestive cardiac failure in post LSCS patient on day 1 k/c/o severe mitral stenosis with severe pulmonary artery hypertension.

Out of them 1 delivered by caesarean section baby expired on 1st day.

Cause of death : cardiorespiratory arrest with shock with severe birth asphyxia in extremely low birth weight baby.

Table - 2 : Jaundice In Pregnancy

	Total (10)	Maternal mortality	Baby with mother	NICU admission	Neonatal mortality
Csection	2	1	1	1	1
Normal	6	2	4	2	1
Abortus	2				

Effect of jaundice in Pregnancy :^{2,3,4}

- Premature Labor
- Still birth
- Post partum Hemorrhage

Out of total 10 cases of jaundice in pregnancy 2 case is delivered by caesarean section and 6 cases delivered normally, 2 cases aborted.

1 baby from caesarean section and 2 babies out of 4 from normal delivery seek NICU admission

1 normally delivered baby expired on 2nd day

Cause of death : Severe birth asphyxia with early onset septicemia with hypoxic ischemic injury grade 2 with DIC in low birth weight baby cried after bag and mask ventilation. 1 baby delivered by c-section expired on 3rd day Cause of death: Meconium aspiration syndrome with early onset septicemia with DIC in low birth weight baby cried after tactile stimulation.

1 maternal mortality occurs on postpartum day 2 Cause of death: Sudden cardiorespiratory arrest in post-partum patient of jaundice

1 maternal mortality occurs on postpartum day 4

Cause of death : hepatic encephalopathy in post-partum patient of jaundice

1 maternal mortality occurs on post operatively day 3

Cause of death: Sudden cardiorespiratory arrest due to fulminant hepatic failure consequent to viral hepatitis E infection with hepatic encephalopathy with hepatorenal Syndrome

Table - 3 : Effect Of Epilepsy In Pregnancy

	Total (6)	Maternal mortality	Baby with mother	NICU admission	Neonatal mortality
Csection	2	1	1	1	1
Normal	4		1	3	

Effect of epilepsy on Pregnancy⁵

- Spontaneous abortion
- Fetal hypoxia
- Bradycardia
- Sudden death of Mother

Out of total 6 cases of epilepsy in pregnancy 2 cases are delivered by caesarean section and 4 cases delivered normally.

1 baby out of 2 from caesarean section and 3 babies out of from ss4 normal delivery seek NICU admission

1 normally delivered baby expired on 2nd day

Cause of death: Severe birth asphyxia with Early onset septicemia with hypoxic ischemic injury grade 2 with DIC in low birth weight baby.

1 maternal mortality occurs on postpartum day 4

Cause of death: Sudden cardiorespiratory arrest in post-partum patient with maternal collapse with shock on post-partum day 4 due to eclampsia with known case of epilepsy since 15 years.

Table - 4 : Tuberculosis In Pregnancy

	Total (5)	Maternal mortality	Baby with mother	NICU admission	Neonatal mortality
Csection	-	-	-	-	-
Normal	4	1	2	2	1
Abortus	1				

Effect of Tuberculosis on Pregnancy:

- Low birth weight baby
- Perinatal Death
- IUGR
- Preterm birth

Out of total 5 cases of tuberculosis in pregnancy 4 cases delivered normally, 1 case aborted.

2 babies out of 4 from normal delivery seek NICU admission

1 normally delivered baby expired on day

Cause of death : Cardiorespiratory failure with shock with Early onset septicemia, severe birth asphyxia with hypoxic ischemic injury .

1 maternal mortality occurs on postpartum day

Cause of death : Respiratory failure due to infection

leading to septicemic shock and acute kidney injury in postnatal patient on day 6, k/c/o TB since 4 years

Table - 5 : Influenza In Pregnancy

	Total (5)	Maternal mortality	Baby with mother	NICU admission	Neonatal mortality
Csection	2	-	1	1	1
Normal	2	1	1	1	
Abortus	1				

Effect on pregnancy^{.6,7,8}

- Increased incidence of miscarriages
- Preterm labor

It is not teratogenic but Asian influenza has been reported to cause anencephaly in early pregnancy.

Out of total 5 cases of influenza in pregnancy 1 baby out of from 2 caesarean section and 1 baby out of from 2 normal delivery seek NICU admission ,1 baby delivered by c-section expired 2nd on day

Cause of death: Severe birth asphyxia with meconium aspiration syndrome with early onset septicemia with hypoxic ischemic injury grade 2 in low birth weight baby cried after tactile stimulation

1 maternal mortality occurs on postpartum day 4

Cause of death : Respiratory failure due to infection leading to septicemic shock with DIC in postnatal patient on day 4 in diagnosed case of influenza (swine flu)since 1 week

Table - 6 : Dengue In Pregnancy⁹

	Total (6)	Maternal mortality	Baby with mother	NICU admission	Neonatal mortality
Csection	1		1	-	
Normal delivery	5	1	4	1	1

Out of total 6 cases of Dengue in pregnancy 1 cases are delivered by caesarean section and 4 cases delivered normally.

1 baby out of from 4 normal delivery seek NICU admission

1 normally delivered baby expired on 3rd day

Cause of death: Early onset septicemia, severe birth asphyxia with meconium aspiration syndrome hypoxic ischemic injury.

1 maternal mortality occurs on postpartum day 2

Cause of death : Sudden cardiorespiratory arrest with shock with maternal collapse on postpartum day 2 in diagnosed case of dengue since 8 days

Table -7 : Thyroid Dysfunction In Pregnancy

	Total (5)	Baby with mother	NICU admission	Neonatal mortality
Csection	1	1	-	-
Normal delivery	4	3	1	1

Effect of thyroid dysfunction :

- Early Pregnancy failure
- Preterm delivery
- Placental abruption
- Low birth weight
- Still birth
- PPH

Out of total 5 cases of thyroid dysfunction in pregnancy 1 case is delivered by caesarean section and 4 cases delivered normally. 1baby out of 4 from normal delivery seek NICU admission,1 baby expired which delivered normally

Cause of death : Cardiorespiratory arrest with shock with severe birth asphyxia low birth weight baby.

TABLE - 8 : ASTHMA IN PREGNANCY

	Total (5)	Baby with mother	NICU admission	Neonatal mortality
Csection	2	1	1	-
Normal delivery	3	2	1	1

Effect of Asthma on effect:

- Low birth weight
- Pre-term labor
- Pre-eclampsia

Out of total 5 cases of Asthma in pregnancy 2 cases are delivered by caesarean section and 3 cases delivered normally.

1 baby out of from 2 caesarean section and 1 baby out of from 3 normal

delivery seek NICU admission

normally delivered baby expired 3rd on day

Cause of death : Cardiorespiratory failure with shock with severe birth asphyxia with hypoxic ischemic injury

EFFECT OF INFECTION ON PREGNANCY¹⁰

Premature rupture of membrane

- Abortion
- IUGR
- Preterm Labor

Table - 9 : Hbsagin Pregnancy¹¹

	Total (8)	Baby with mother	NICU admission	Neonatal mortality
Csection	1	1	-	-
Normal delivery	7	5	2	1

Out of total 8 cases of HbsAg in pregnancy 1 case is delivered by caesarean section and 7 cases delivered normally.

2babies out of from 7 normal delivery seek NICU admission

1 normally delivered baby expired on 3rd day

Cause of death :Early onset septicemia with hypoxic ischemic

injury grade 2 with DIC in low birth weight baby cried after tactile stimulation

Table -10 : HIV In Pregnancy^{12,13,14,15}

	Total (8)	Baby with mother	NICU admission	Neonatal mortality
Csection	2	1	1	-
Normal delivery	6	5	1	1

Out of total 8 cases of HIV in pregnancy 2 cases are delivered by caesarean section and 6 cases delivered normally.

1 baby out of from 2 caesarean section and 2 babies out of from 6 normal delivery seek NICU admission

1 normally delivered baby expired on day

Cause of death : Cardiorespiratory arrest with shock with Early onset septicemia with DIC in extremely low birth weight.

URINARY TRACT INFECTIONS IN PREGNANCY

Out of total 8 cases of Urinary Tract Infections in pregnancy 1 case was delivered by caesarean section and 6 cases were delivered normally.

1 baby out of from 6 normal delivery seek NICU admission
1 normally delivered baby expired on 3rd day

Cause of death : Early onset septicemia, severe birth asphyxia with meconium aspiration syndrome hypoxic ischemic injury

EFFECT OF TYPHOID IN PREGNANCY:

Out of total 8 cases of cardiac disease of pregnancy 1 case is delivered by caesarean section and 7 cases delivered normally.

1 baby from caesarean section and 2 babies out of from 7 normal delivery seek NICU admission

1 normally delivered baby expired on 3rd day

Cause of death : Early onset septicemia with hyaline membrane disease with severe birth asphyxia cried after tactile stimulation.

MALARIA IN PREGNANCY :

Malaria in Pregnancy : Out of total 3 cases of malaria in pregnancy all cases are delivered normally

1 baby seek NICU admission

CHRONIC HYPERTENSION IN PREGNANCY

Effect of Chronic Hypertension :

- Maternal Morbidity / Mortality
- Superimposed Pre eclampsia
- Placental Abruption
- Low Birth weight
- Preterm delivery

Out of total 4 cases of chronic hypertension in pregnancy 1 cases are delivered by caesarean section and 3 cases delivered normally. all abies are with mother.

no one seek NICU admission

RENAL DISEASE IN PREGNANCY:

Effect of Renal disease on pregnancy:

- Infertility
- Premature Delivery
- IUGR
- Pre-eclampsia

Out of total 3 cases of renal disease of pregnancy 2 cases are delivered by caesarean section and 1 cases delivered normally

RESULT

Out of 100 studied patients. there are 13 Neonatal mortality, 8 Maternal mortality

14 cases of Heart disease, 1 neonatal,1 maternal mortality

10 cases of jaundice ,2 neonatal and ,3 maternal mortality

6 cases of epilepsy, 1 neonatal mortality,1 maternal mortality

6 cases of dengue ,1 neonatal mortality, 1 maternal mortality

5 cases of influenza ,1 neonatal mortality, 1 maternal mortality

5 cases of tuberculosis ,1 neonatal mortality, 1 maternal mortality

8 cases of urinary tract infections, 1 neonatal mortality

8 cases of HbsAg, 1 neonatal mortality

8 cases of HIV, 1 neonatal mortality

8 cases of typhoid, 1 neonatal mortality

5 cases of thyroid disease , 1 neonatal mortality

5 cases of asthma 1 neonatal mortality

Table - 11 : Neonatal Mortality

Disease	No. of neonatal death
Jaundice in pregnancy	2
Thyroid dysfunction in pregnancy	1
Asthma in pregnancy	1
Tuberculosis in pregnancy	1
Influenza in pregnancy	1
Dengue in pregnancy	1
HBsAg in pregnancy	1
HIV in pregnancy	1
Typhoid in pregnancy	1
Urinary tract infection in pregnancy	1
Heart disease in pregnancy	1
Epilepsy in pregnancy	1

Table - 12 : Maternal Mortality

Disease	No. of neonatal death
Jaundice in pregnancy	3
Tuberculosis in pregnancy	1
Influenza in pregnancy	1
Dengue in pregnancy	1
Heart disease in pregnancy	1
Epilepsy in pregnancy	1

Table - 13 : Abortus

Disease - No of abortus

Heart disease in pregnancy (Medically terminated)-3

Jaundice in pregnancy (spontaneous)-2

Tuberculosis in pregnancy (spontaneous)-1

Medically terminated abortion in early pregnancy is seen highest with heart disease in pregnancy Highest chances of Spontaneous Abortion is seen MC in jaundice in pregnancy followed by tuberculosis.

CONCLUSION

- Study shows that highest chances of Neonatal mortality among studied diseases is seen in pregnancy with jaundice followed by HIV, HBsAg, asthma, Heart disease, epilepsy, TB, UTI, influenza, Typhoid, Dengue, Thyroid disease in Pregnancy
- Highest chances of Maternal mortality among studied diseases is seen in pregnancy with jaundice in pregnancy followed by Heart disease, epilepsy tuberculosis, influenza and dengue in pregnancy.
- Where chances of Medically terminated abortion in early pregnancy is seen highest with heart disease in pregnancy
- Highest chances of Spontaneous Abortion is seen MC in jaundice in pregnancy followed by tuberculosis.

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Original Articles

A Comparative study on visual outcomes in Myopic Astigmatic Refractive error correction by Customized Femtosecond Laser and Mechanical Microkeratome.

Ankit S. Varshney*, Dr. Mahendrasinh D. Chauhan**

*Assistant Professor, Shree Bharatimaiya College of Optometry & Physiotherapy, Surat.

**Principal, Shree Bharatimaiya College of Optometry & Physiotherapy, Surat.

KEY WORDS : Myopic Astigmatic, Refractive error, Femtosecond, Laser and Mechanical Microkeratome.

ABSTRACT

To compare the visual outcomes in myopic astigmatic refractive error correction by Customized femtosecond laser and Mechanical Microkeratome LASIK. This was a prospective observational study, performed on 200 eyes of 100 patients treated between 2016 to 2020 for myopia and astigmatism (sphere \leq -6.00 Diopters; cylinder \leq -6.00 Diopters). The first 100 consecutive eyes that had LASIK flaps created with a femtosecond laser were compared with the first 100 consecutive eyes that had flaps created with a mechanical microkeratome. All eyes received wavefront-guided LASIK treatments performed with a VISX S4 IR Advanced CustomVue excimer laser (AMO). Refractive predictability, change in mean spherical equivalent refraction, postoperative uncorrected visual acuity (UCVA), and best spectacle-corrected visual acuity (BSCVA) were compared at 1 day, 1 week and 1 month following surgery. The refractive accuracy was the same for both groups. At all follow-up, the percentage of eyes that achieved a postoperative UCVA of 20/20 or better was significantly higher in the femtosecond laser group than in the mechanical keratome group. In addition, a higher percentage of eyes in the femtosecond laser group achieved a postoperative UCVA of 20/16 at 1 month. Creating LASIK flaps with the femtosecond laser resulted in faster visual recovery and better UCVA.

INTRODUCTION

LASIK is the world's most popular refractive surgery technique since the technique was presented at the beginning of the 1990s, its popularity has spread because of the unquestionable advantages it has over the surface techniques: rapid visual recovery, relative absence of pain, ease of performing the treatment and greater refractive stability (partial only) where hyperopic treatments are concerned. LASIK is commonly referred to as laser eye surgery or laser vision correction, is a type of refractive surgery for the correction of myopia, hypermetropia, and astigmatism. The LASIK surgery is performed by an ophthalmologist who uses a laser and microkeratome or Femtosecond Laser to reshape the cornea in order to improve visual acuity. For most patients, LASIK provides a permanent alternative to eyeglasses or contact lenses. Major side effects include halos, starbursts, night-driving problems, and eye dryness.

Compared to a flap created with a mechanical microkeratome, a femtosecond laser flap offers several potential advantages: more uniform flap thicknesses, customizable flap diameter and hinge position, smoother stromal beds, and lower rates of flap creation complications. However, mechanical keratomes have a long record of success of safety, and they cost significantly less than a femtosecond laser.

A few published reports have compared these two competing techniques, but the results of these studies have been mixed. Some studies have shown equivalency between the femtosecond laser and the mechanical keratome whereas other studies have reported improved visual results with the femtosecond laser. The current study was designed to determine whether use of different flap creation techniques yields differences in visual outcomes and visual recovery.

PATIENTS AND METHODS

Data for this study were taken from patient records extracted between 2016 to 2020 from the Laser Vision

Correspondence Address : Dr. Ankit S. Varshney
Shree Bharatimaiya College of Optometry & Physiotherapy,
Surat.

centre and Keshvi Eye Hospital clinical database. For both the mechanical microkeratome and femtosecond laser groups, the first 100 consecutive eyes that met the following conditions were included in the study:

1) Stable pre-operative spherical refractive error ≤ -6.00 D with Astigmatism ≤ -6.00 D 2) target refraction of emmetropia, 3) primary wavefront-guided ablation, and 4) 1-month examination data available. The femtosecond laser flaps were created using an IntraLase femtosecond laser, and the mechanical microkeratome flaps were created using the disposable blades in Amadeus II Microkeratome. The femtosecond laser flap diameter varied from 9.0 to 9.5 mm, with a programmed ablation depth between 90 μ m. The 140- μ m head was used for the mechanical microkeratome. Patients were educated about both methods of flap creation and selected the one they preferred for their procedure. The wavefront-guided treatments were performed using a VISX STAR S4 IR Advanced CustomVue excimer laser (AMO) with an optical zone of 6.0 mm and transition zone of 8.0 mm. Postoperative examinations were conducted at Ivue Laser vision centre and Keshvi eye hospital. Demographic and other preoperative parameters were analyzed to ensure that the groups were well matched. Refractive predictability, change in mean spherical equivalent refraction, postoperative uncorrected visual acuity (UCVA), and loss of best spectacle-corrected visual acuity (BSCVA) were compared at 1-day, 1-week and 1-month follow-up.

Visual acuity was measured at each visit using a Snellen vision chart.

Tabulations of data and statistics were performed with SSPS 7.0 and Microsoft Office Excel 7.0.

RESULTS

The two groups were well matched in terms of gender, sphere, cylinder, mean spherical equivalent refraction, and pupil size (Table 1). The mean preoperative sphere was -2.765 D for the femtosecond laser group and -3.17D for the mechanical microkeratome group; the mean cylinder was -1.12 D for the femtosecond laser group and -1.18 D for the mechanical microkeratome group. A small difference in mean age was noted between groups (femtosecond laser: 25.22 years; mechanical keratome: 24.82 years), but this difference was not deemed clinically relevant. Both groups achieved similar refractive predictability results. Both groups also achieved similar

levels of refractive stability, with eyes in both groups remaining close to Plano from the 1-day follow-up through the 1-month follow-up. Although refractive results were similar, a significant difference was observed in the percentage of eyes that achieved a postoperative UCVA of 20/20 or better (Table 2). At 1-day follow-up, 88.6% of eyes in the femtosecond laser group achieved UCVA of 20/20, compared to 83.2% of eyes in the mechanical microkeratome group ($P=0.0005$). Both groups showed improvement with continued follow-up, but a higher percentage of eyes in the femtosecond laser group achieved 20/20 UCVA at each time point (Fig 2). Fewer eyes in the femtosecond laser group experienced a loss of two or more lines of BSCVA in the early postoperative period. At 1-week postoperative, only 0.9% of eyes in the femtosecond laser group had lost two or more lines of BSCVA, compared to 2.8% in the mechanical microkeratome group. By 1 month postoperatively, however, both groups showed similar results.

DISCUSSION

As this study shows, the femtosecond laser significantly improves both the speed of visual recovery as well as UCVA through 1 month postoperative. This improvement occurred despite similar refractive predictability in both the femtosecond laser group and mechanical microkeratome group. Thus, the improved UCVA was not due to residual refractive error in the mechanical microkeratome group.

Although this difference disappeared by 1 month postoperative, the initial disparity further indicates a faster visual recovery when flaps are created with the femtosecond laser.

Given that most patients prefer LASIK over surface ablation in part because LASIK offers a more rapid improvement in vision, the enhanced speed of visual recovery after a femtosecond laser procedure represents a significant advantage. Speed of visual recovery also has implications for when patients can return to work after surgery, particularly for patients who have jobs that require excellent vision. The results of previous studies comparing the outcomes of femtosecond laser LASIK with mechanical keratome procedures have been varied. A study by Patel et al¹ examined 21 patients who had a femtosecond laser flap created in one eye and a mechanical microkeratome flap created in the other eye, and they found that the method of flap creation did not

Table : 1 Demographic and Preoperative parameters in eyes that underwent LASIK flap creation with a Femtosecond Laser or Mechanical Microkeratome

Parameter	Mean ± Standard Deviation (Range)		P Value*
	Femtosecond Laser (n=100 eyes)	Mechanical Microkeratome (n=100 eyes)	
Male/female (no. of patients)	18/32	20/30	0.3796
Age (y)	25.22± 4.81	24.82 ±5.64	0.0019
Sphere (D)	-2.765 ± 1.16	-3.17± 1.60	0.1748
Cylinder (D)	-1.12 ±0.35	-1.18 ±0.37	0.4142
Mean Spherical Equivalent Refraction (D)	-3.324 ±1.69	-3.76 ±1.69	0.1332
Pupil size (mm)	6.3±1.1	6.3± 1.0	0.2095

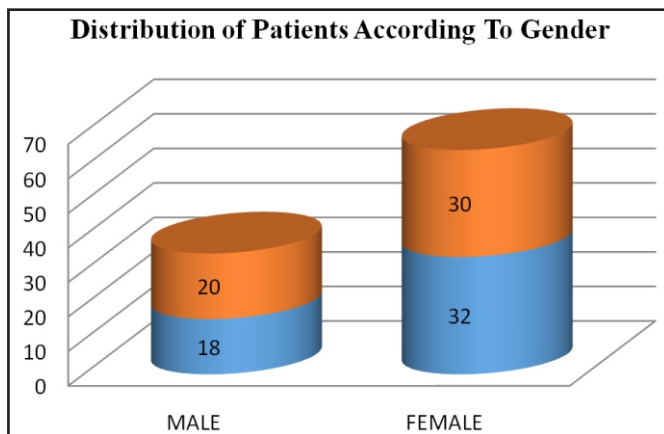
*For continuous variables, a two-sample t test was used to measure significance. For categorical variables, a chi-square test was used. All assumptions were met for these respective tests.

Table : 2 Percent of Eyes Achieving 20/20 Uncorrected Visual Acuity After LASIK With the Femtosecond Laser or Mechanical Microkeratome

Time Duration	Percentage of Eyes			P Value*
	Femtosecond Laser	Mechanical Microkeratome	Difference	
1 Day	88.6	83.2	5.4	0.0005
1 Week	92.6	85.9	6.7	<0.0001
1 Month	95.5	93.0	2.5	0.0166

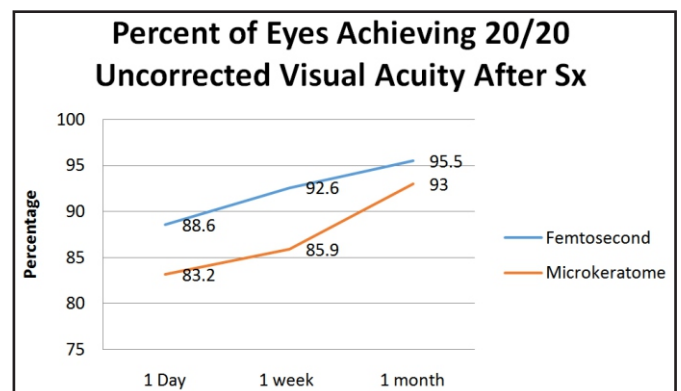
*Chi-square test.

Fig 1: Gender Distribution



affect visual outcomes. Similarly, Lim et al² (n=55 eyes) and Kezirian and Stonecipher³ (n=375 eyes) concluded that use of a femtosecond laser failed to produce any statistically significant difference in postoperative UCVA at 3 months postoperative. In contrast, Durrie and Kezirian⁴ (n=102 eyes) reported that the femtosecond laser–created flaps produced a statistically better UCVA.

Fig 2: Percentage of eyes that achieved uncorrected visual acuity of 20/20 or better was higher for the femtosecond laser group at all follow-ups.



Several reasons for these different results are possible, including the relatively small sample sizes of these studies, which may be partially responsible for their lack of agreement.

Although the Prospective nature of the current study is a drawback, the study design also has several strengths.

The large sample size (200 well-matched eyes) allowed for statistically valid conclusions; limiting the study to consecutive treatments minimized selection bias. Also, the limits on preoperative myopia and cylinder reduced the confounding influence of unpredictable clinical results that can occur when treating higher levels of ametropia. In addition, all treatments were performed between 2016 to 2020 using the latest technology and the same wavefront-guided ablation profile, therefore the study is representative of modern clinical practice. Because this study was intentionally confined to eyes with moderate preoperative myopia and cylinder, it cannot predict results for hyperopia or high myopia treatment. However, clinical reasoning suggests that similar results would be expected for a wide range of ametropia. Although it is not readily apparent why the femtosecond laser improves visual outcomes, several possible explanations include the more predictable planar flap, more accurate repositioning of the flap at the end of the procedure, and/or improved smoothness of the stromal bed.

Particularly for procedures that use complex ablation patterns, such as wavefront-guided treatments, minimizing stromal bed imperfections and maximizing the predictability of the flap dimensions may help in achieving optimal results.

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Correlation of Clinically & Sonographically estimated Fetal Birth Weight with Actual Birth Weight in Cephalic Presentation

*Dr. Sugandha Patel, Dr. Akash Makwana**

*Assistant Professor, ** Senior Resident Department of Obgy B.j Medical College & Civil Hospital Ahmedabad.

KEY WORDS : EBW (Expected Birth Weight), SFH (Symphysio Fundal Height), AG (Abdominal Girth)

ABSTRACT

Introduction : Knowledge of the weight of the fetus in utero is important for obstetrician to decide whether to deliver or not to deliver the fetus. And also to decide the mode of delivery. Accurate estimation of fetal weight is of paramount importance in the management of labor and delivery. High rate of perinatal mortality in developing countries makes estimation of fetal weight (EFW) antenatally pivotal to obstetricians. **Objective** : EBW was estimated by clinical method using Johnson's formula, Dare's formula & by USG with Hadlock's formula. All EBW derived from these 3 methods were compared with the actual birth weight, to find out EBW by which formula has closest resemblance with actual birth weight. **Results** : In this analysis using paired t-test, the reissignificant statistical difference found between actual birth weight & Johnson's method (p-value < .00001) and between actual birth weight & Hadlock's method (p-value < .00001). There is no statistically significant difference found between actual birth weight & Dare's method (p-value 0.32725) **Conclusion** : The assessment of fetal weight using Dare's formula is more accurate for predicting birth weight at term which is easy and cost-effective, amongst all 3 methods.

INTRODUCTION

In the modern obstetrics, our main aim is to achieve the best quality of life; for both, the mother & newborn. Knowledge of the weight of the fetus in utero is important for obstetrician to decide whether to deliver or not to deliver the fetus. And also to decide the mode of delivery. Estimation of fetus weight is being done clinically, which has been criticized as less accurate because of inter-observer variations. But Sherman et al.⁽¹⁾ Baum et al.⁽²⁾ and Titapant et al.⁽³⁾ have found clinical estimation quite reliable.

A prediction formula for birth weight has been first deduced from SFH by **Johnson's and Toshach** (1954). In 1957, Johnson's simplified the equation for the same variables.

Ultrasound estimation of fetus weight using different formulas has gained much popularity after advent of obstetric USG. An accurate means of estimating fetal weight using ultrasonography was first described by Campbell and Wilkin in 1975. The most popular formulae are Shepard, Warsof's with Shepard's modification and **Hadlock's**. These formulae are included in most ultrasound equipment packages.

Various clinical formulas have come into usage for fetus weight estimation. In 1990, **Dare et al**⁽⁴⁾ used the product of symphysis fundal height (SFH) and Abdominal girth (AG) measurement (both in cm) in obtaining fairly predictable fetus weight estimation.

Basically, there are three groups of birth weights that are important to the clinicians; i.e. the low birth weight, defined as <2500gm, normal birth weight and macrosomic babies i.e. >4000gm. Categorization of fetus weight into ei the small or large for gestational age may lead to timely obstetric interventions that are significantly different from routine antenatal care.

The low birth weight especially associated with preterm deliveries. In cases of suspected preterm delivery, estimation of fetus weight is helpful for perinatal counselling on chances of survival, the intervention taken to postpone preterm delivery, optimal route of delivery, or the level of hospital where delivery should occur may be based wholly or in part on the estimation of expected birth weight. Fetal macrosomia is associated with maternal morbidity, cephalo-pelvic disproportion, prolong & or obstructed labour, shoulder dystocia, birth asphyxia and birth trauma, increased operative delivery &/or lower

Correspondence Address : **Dr. Sugandha Patel**
12, Vijaypark Soc., Nr. SantKabir School, Navrangpura, Ahmedabad - 380009.
E-mail : sugandhapancholi@rediffmail.com

genital tract injuries. Estimation of fetus birth weight can be useful in preventing these sequela.⁽⁵⁾

Estimation of fetus birth weight can also be useful while managing labour in conditions like diabetes during pregnancy, intrapartum management of fetuses presenting by the breech and vaginal birth after a previous caesarean section. Hence, from the last decade, estimated fetus weight has been incorporated into the standard routine antepartum evaluation. A simple formula can be used at periphery level to calculate EBW which may aid peripheral health worker to take proper obstetric decision.

In 1994, MRI was introduced for the estimation of fetal weight, which is done by measuring the fetal body volume. **Semi- automatic segmentation software** has recently been used for estimating fetal volume. Converting it through a formula to estimate fetal weight. Approximately 10 studies have shown that magnetic resonance imaging is more accurate than 2- dimensional ultrasound imaging in the estimation of fetal weight. Yet, the magnetic resonance imaging technique currently is not implemented clinically as its strong disadvantage is non-availability; that even where it is available, it is very expensive.⁽⁶⁾

MATERIALS AND METHODS

The study was conducted in Department of Obstetrics and Gynecology, B. J. Medical College and Hospital, Ahmedabad in year 2017-2019.

Study Population

- 200 antenatal women of third trimester.
- The patients were selected from outpatient department and labor wards who had their last fetal weight estimation done within 1 week of delivery.
- Women were asked to empty her urinary bladder before clinical examinations. Measurements were taken after centralizing uterus. The SFH is measured with a soft tape-measure from the superior edge of the symphysis pubis in the midline to the line identifying the highest point on the fundus, and recorded. AG was recorded at the level of umbilicus.
- BPD, FL & AC were measured from USG machine, which gave EBW by Hadlock's formula.

Type of Study

Prospective observational study.

Inclusion criteria

- Term Pregnancies 37-42Weeks.
- Singleton Pregnancy.
- Vertex Presentation.

Exclusion criteria:

- Pre-term, post-term
- Obesity
- Oligohydramnios, Polyhydramnios
- Multiple Pregnancies
- Mal presentation
- Congenital Anomalies of Fetus
- Intrauterine Fetus Death, IUGR
- Premature Rupture of Membrane(PROM)
- Pregnancy with Uterine Fibroid or Any Abdominal or Adnexal or Urinary Bladder Mass
- Placental anomalies for eg. Placenta Previa, Abruptio Placentaetc.

EBW USING CLINICAL METHODS

EBW was calculated clinically using Johnson's Formula & Dare's Formula which are as follow-

JOHNSON'S FORMULA⁽⁷⁾

EBW (in Grams) = [{Symphysis Fundal Height(in Cm) – k} x 155]

Where, k is

12 – If vertex is at or above the level of Ischial Spines

11 – If vertex is below the level of Ischial Spines

DARE'S FORMULA⁽⁸⁾

EBW (in Grams) = [Symphysis Fundal Height(in Cm) x Abdominal Girth (in Cm)]

USG METHOD

EBW was calculated using USG machine which used Hadlock's Formula which is as follow-

HADLOCK'S FORMULA⁽⁹⁾

Log¹⁰ (EBW) = 1.4787 – 0.003343 AC x FL + 0.001837 BPD² + 0.0458 AC + 0.158 FL)

Where,

BPD - Bi Parietal Diameter,

AC-Abdominal Circumference and FL - Femur Length

Standard deviation of prediction error and p-value were calculated with the help of statistician and analysis was done. A p-value <0.05 was considered significant using 95% Confidence interval. Student paired t test was used

RESULTS

MODE OF DELIVERY

Type of delivery	Normal Delivery	LSCS
Present study	85% (170)	15%(30)

MATERNAL PARITY DISTRIBUTION

	Primigravida	Multigravida
Present study	34.5% (69)	65.5%(131)

BIRTH WEIGHT IN RELATION TO GRAVIDA

GRAVIDA	Birth weight in gm					Present study
	<2000	2000-2500	2501-3000	3001-3500	>3500	
1	1	14	40	12	3	70 (35%)
2	0	16	34	14	5	69 (34.5%)
3	0	9	18	12	2	41 (20.5%)
4	0	2	6	7	1	16 (8%)
>4	0	0	2	2	0	04 (2%)
Total	1	41	100	47	11	200

MEAN FETAL BIRTH WEIGHT, STANDARD DEVIATION, STANDARD ERROR & CONFIDENCE INTERVAL

Meathods	Mean Fetal Birth Weight	Standard Deviation	Standard Error (SE=SD/ \sqrt{n})	2SE	Confidence Interval (Mean + 2SE)
Dare's Formula	2827.86	406.8706	28.77	57.54	2770.32-2885.40
Johnson's Formula	3058.875	408.9970	28.92	57.84	3001.04-3116.72
Hadlock's Formula	3211.52	364.8505	25.8	51.6	3159.92-3263.12
Actual Birth Weight	2821.22	398.5486	28.18	56.37	2764.85-2877.59

COMPARING ACTUAL BIRTH WEIGHT WITH DIFFERENT METHODS

Meathods	N	Mean + SD	p-Value	Statistical Significance
Actual Birth Weight	200	2821.22 + 398.5486		
Dare's Formula	200	2827.86 + 406.8706	0.32725	Not Significant
Johnson's Formula	200	3058.87 + 408.9970	< .00001	Statistically Significant
Hadlock's Formula	200	3211.52 + 364.8505	< .00001	Statistically Significant

for comparison of various method of birth weight estimation with actual birth weight.

In this analysis using paired t-test, there is significant statistical difference found between actual birth weight & Johnson's method (p-value < .00001) and between actual birth weight & Hadlock's method (p-value < .00001)

There is no statistically significant difference found between actual birth weight & Dare's method (p-value 0.32725)

This finding is comparable with Charles Njoku et al study,2014.⁽¹⁰⁾ & Shirish Toshniwal et al study 2017⁽¹¹⁾

DISCUSSION

This study indicates that among three methods, clinical estimation of birth weight using Dare's method shows positive correlation with actual birth weight of the fetus after delivery.

This method clearly has a role in management of labor and delivery in a term pregnancy.

This clinical method is simple, easy and cost-effective is of great value especially in a developing country like India.

Recommended based on the findings from this study is that clinical fetal weight estimation should be taught to all health workers and it is suggested for use as a routine screening tool for all parturients at term and in labor.

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“Short term functional outcomes of single Stage Surgically treated Multiligamentous Knee injuries in cases of Knee Dislocation”

Dr. Ujval Deliwala*, Dr. Sumit Jain Sethia**, Dr. Akshay Patel***

*Consultant Arthroscopic Surgeon, Deliwala Arthroscopy Hospital & Sports Injury Center, Bhavnagar

**Senior Resident, Department of Orthopaedics, Government Medical college, Bhavnagar

***Assistant Professor, Department of Orthopaedics, BJ Medical College and Civil Hospital, Ahmedabad

KEY WORDS : Knee dislocation, ligament reconstruction, ligament repair, multiligament knee injury
Abbreviations : MLKI (Multi ligament knee Injury)

ABSTRACT

Introduction: Knee dislocation is a disastrous injury with significant displacement of tibia over femur leading to disruption of multiple ligaments of knee and other surrounding soft tissue structures. Open wounds and neurovascular insult can put the limb in jeopardy. The complexity of injury and varied treatment makes this MLKI challenging.

Purpose : This review article describes multiligament knee injuries (MLKI) in depth, with a focus on associated injuries, operative management, outcomes, and complications.

Materials and Methods : We conducted a retrospective observational study of all patients who underwent MLKI surgeries between 2014 to 2020 in a dedicated Arthroscopy and sports injury Center (Deliwala Hospital in Bhavnagar). Over the past 7 years, we have treated many cases and have taken 30 cases for this article. The Schenck knee dislocation classification was used to classify the ligament injury patterns.

Results : The male of age group 36-50 yrs most commonly involved. High Velocity flexion injury is most common mechanism. Medial sided bicruciate injuries most common pattern. 3 patients develops knee stiffness, 2 superficial wound infection and 1 had popliteal artery injury. Early surgeries (3-6 weeks) is always preferred over delayed one. Repair had higher failure rate and lower return to sports activities compared to reconstructions. Surgical treatment has higher mean Lysholm score 96.3.

Conclusions : This review suggests that the best treatment guidelines for MLKI is still awaited due to heterogeneous nature of the injuries themselves and the many treatment strategies available, but better functional outcomes have been achieved with reconstruction rather than repair. Surgery must be performed early within 6 weeks for better results. When feasible ACL reconstruction can be delayed thereby reducing rate of arthrofibrosis. High-quality research efforts needed to investigate best modality of treatment of MLKI.

INTRODUCTION

Knee dislocation is potentially disastrous injury with significant displacement of the tibia and femur disrupting multiple knee ligaments and surrounding soft tissue envelope. If neuro-vascular involvement be there, limb is severely jeopardised. In knee dislocation, multiligament knee injuries are quite rare with an estimated prevalence of 0.02% to 0.2% of all orthopaedic injuries.^[1]

These injuries are associated with high velocity road

traffic accident with knee either in flexion or in extension. Multiligament knee injury defined as disruption to at least two of the four major knee ligament structures: the anterior cruciate ligament (ACL), the posterior cruciate ligament (PCL), the posteromedial corner, and the posterolateral corner (PLC).^[2,3] A knee dislocation is typically characterized by rupture of both cruciate ligaments, in combination with either an associated grade III medial or lateral sided injury.^[4-6] True incidence is masked due to spontaneous reduction of knee dislocation

Correspondence Address : Dr. Sumit Jain Sethia
C595-A/w, Deliwala Clinic, Nr. Crescent Circle, Bhavnagar-364001.
E-mail : sumitjain41@gmail.com

prior to presentation.^[3]

On the basis of tibial displacement relative to femur, knee dislocations can be classified into Kennedy position classification system. This system classifies knee dislocation into anterior, posterior, lateral, medial, and rotatory [Table 1]. Rotatory dislocations later subclassified into anteromedial, anterolateral, posteromedial and posterolateral^[14]

Schenck classify knee dislocation in 1994, on the basis of anatomical patterns of ligaments torn^[5,6] and later modified by Wascher. Each knee dislocation abbreviated with KD (knee dislocation) and is followed by the number of ligaments (or complexes) disrupted (I to IV) and "M" if the posteromedial corner is injured or "L" if the posterolateral corner is injured. It was further classified to include a type V for periarticular fractures, a "C" modifier for arterial injuries, and an "N" modifier for nerve injuries (Table 2)^[5,7]

Table 1: Kennedy "position" classification system for knee dislocations

DIRECTION	MECHANISM	INJURY PATTERN
Anterior (most common)	Hyperextension	Posterior Capsules, ACL/PCL tears
Posterior (2nd most common)	Dashboard	PCL torn
Lateral	Valgus	Collaterals, Cruciates
Medial	Varus/rotation	Collaterals, Cruciates
Rotatory	Rotatory	Complex tears

Table 2: Schenck anatomic classification system for knee dislocations

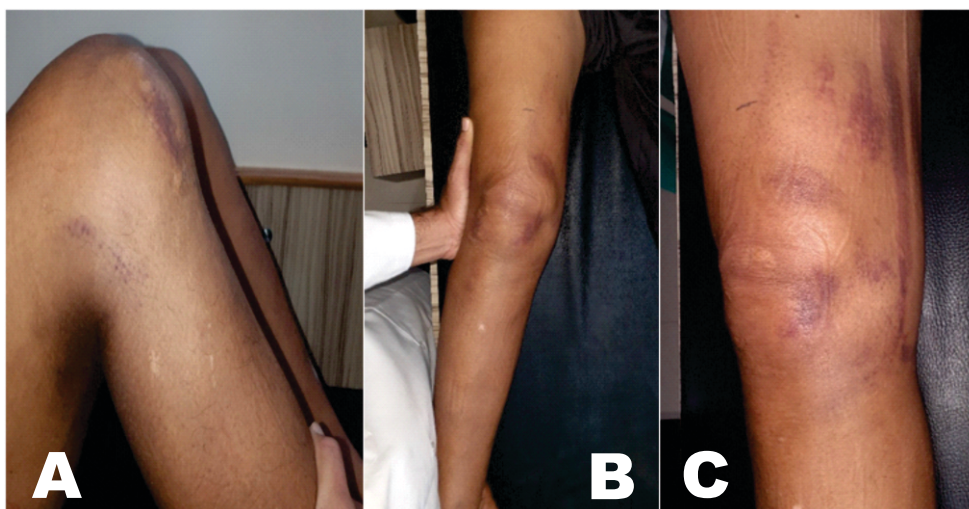
<p>Schenck Classification (based on the number of ruptured ligaments)</p> <ul style="list-style-type: none"> • KD I Multiligamentous injury with the involvement of the ACL or PCL • KD II Injury to ACL and PCL only (2 ligaments) • KD III Injury to ACL, PCL, and PMC or PLC (3 ligaments). • KDIIIM (ACL, PCL, MCL) and KDIIIL (ACL, PCL, PLC, LCL). • KD IV Injury to ACL, PCL, PMC, and PLC (4 ligaments) KDIV has the highest rate of vascular injury (5-15%%) based on Schenck classification • KD V Multiligamentous injury with periarticular fracture

FIG 1: Showing clinical pictures of Knee subluxation with posterior knee dislocations.

(A) Posterior sag suspecting PCL injury

(B) valgus stress showing laxity of medial side suspecting MCL injury,

(C) Bruise over anterior aspect of thigh and knee suspecting high velocity acute injury



ASSOCIATED INJURY

Knee dislocation associated with damage to popliteal artery, common peroneal nerve and other soft tissue injuries around knee.

The prevalence of vascular injury associated with knee dislocation ranging from 3.3% to 64%.^[8-12] The diagnosis of popliteal artery injury is a subject of controversy, as numerous authors have advocated routine arteriography or duplex Colour Doppler. Urgent Intervention is needed either repair or use graft. Unfortunately, knee dislocations associated with popliteal artery injury generally have a poor prognosis with high rates of eventual amputation.^[8-9]

The common peroneal nerve injured because of anatomic constraints on its ability to accommodate to traumatic changes in knee position, both proximally at the fibular neck and distally at the intermuscular septum.^[13] The incidence is 14%–25%, with as high as 41% cases reported after posterolateral complex (PLC) injuries.^[15] Approximately 30% of cases have a complete neurological palsy and the rest have a partial peroneal nerve palsy.^[16] Only 38.4% patients with a complete palsy, and 87.3% patients with incomplete palsy have been found to have functional recovery (MRC grade ≥ 3).^[17] It leads to substantial morbidity due to the resulting foot drop and likely need for an orthosis, neurolysis, nerve transfer and tendon transfer required if it persists after 1 year.

MRI is extremely sensitive for detecting cruciate ligament, collateral ligament injury, and injury to the posterolateral and posteromedial corner. Its key to identifying extra-ligamentous or other soft-tissue knee injuries.

Stress radiography^[18,19] is inexpensive tool capable of showing the magnitude of knee instability in an objective and quantifiable way, and can assist in preoperative decision making. stress radiography utilized to quantify and to follow postoperative stability in addition to preoperative assessment. At our institution routinely intraoperative stress radiographs are obtained to direct the reconstruction and repair of soft tissues.

This review article describes multiligament knee injuries in depth, with a focus on associated injuries, operative management, outcomes, and complications.

MATERIALS AND METHODS

STUDY CENTRE: Arthroscopy and Sports Injury Center (Deliwala Hospital in Bhavnagar)

STUDY POPULATION: All IPD and OPD patients coming to clinic who underwent MLKI surgeries.

INCLUSION CRITERIA:

1. Patient who underwent surgery for at least 2 knee ligament structures.
2. Same operating surgeon.
3. Single stage surgery.
4. At least 6 months of follow-up.

EXCLUSION CRITERIA:

1. Open injuries
2. Associated multiple bone fracture
3. Head injuries
4. Bilateral involvement
5. Patient who Lost follow-up.

SAMPLING TECHNIQUE- Simple Random Sampling

STUDY DESIGN- Retrospective Observational Study

STUDY DURATION- June 2014 to June 2020

SAMPLE SIZE CALCULATION AND JUSTIFICATION

Samples are taken as per inclusion criteria and 30 cases are included for our study.

DATA COLLECTION

All information along with identity of participants will be kept confidential. After explaining the purpose of the study, a written informed consent was obtained from all the participants before data collection. Injury was classified according to schenck classification.^[6] The data were recorded in a predesigned and pretested proforma. parameter to be studied:

1. Age
2. Gender
3. Mode of injury
4. Mechanism of injury
5. Complications following surgery
6. Functional outcomes by **LYSHOLM SCORE**- Calculated using following parameters : a) Limp, b) support, c) pain, d) instability, e) locking, f) swelling, g) stair-climbing, h) squatting.

STATISTICAL ANALYSIS:

Data was collected in a predesigned proforma and later tabulated in a Microsoft excel sheet. Data was analyzed using SPSS software version 20, IBM Corporation. Results on categorical data is shown as n (% of cases).

RESULTS AND DISCUSSION

Total 30 patients of MLKI in knee dislocation included as per inclusion criteria who were treated in dedicated arthroscopy and sports injury center in Bhavnagar from 2014 to 2020. Patients were followed atleast 6 month postoperatively in our center. 17 patients followed more than 4 year and 8 patients more than 2 year and rest 5 for 9 months.

As shown in table 3, incidence of MLKI is predominant in 36-50 years age group and higher in male (73%) than female (27%). Most common mode of injury is high velocity road traffic accident (90%) with flexion mechanism (table-5,6). 23 patients undergone surgeries within 4 weeks and rest 7 after 4 weeks. All patient undergone single stage Arthroscopy reconstruction surgery of torn structures. In few patients open reconstruction of collaterals done. Most frequent injury (table-9) associated was ACL + MCL (36.67%) followed by ACL+PCL (23.34%). All patients undergone Autograft reconstruction, among them in 26 patients we use Hamstrings tendon and in 4 patients Peroneus longus Tendon. In single stage surgery, 2 Ligaments were reconstructed in 24 cases and 3 Ligaments reconstructed in 6 cases (Fig-2,3).

Fig.2 : (A) Preoperative KD-III L type of Knee Dislocation.2 (B) Postoperative Single stage 3 Ligament [PCLR + ACLR+ PLC] Reconstruction in a 36yrs female (Modified Larson's & Muller Popliteal Bypass technique)

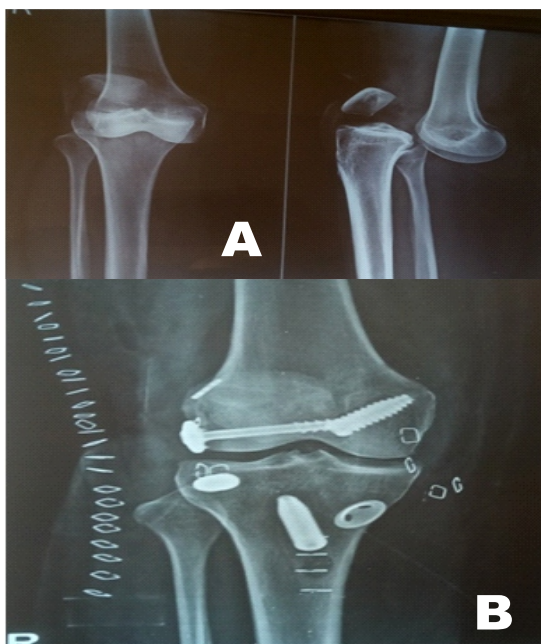
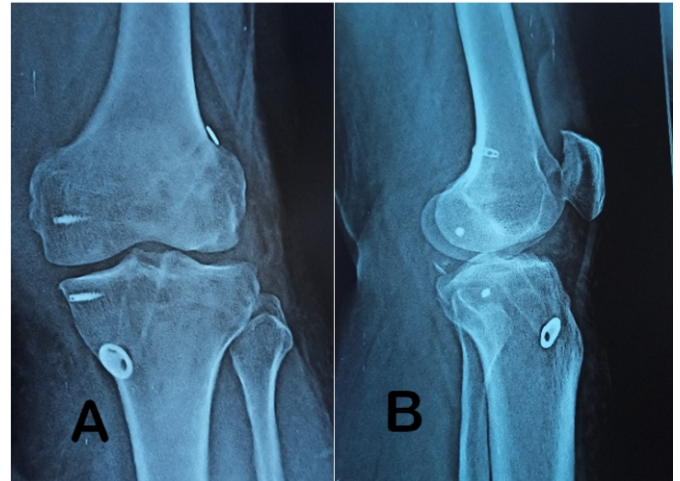


Fig.3 (A/B): Single Stage ACLR +MCL reconstruction in MLKI



Complications (Table-8) occurs in few patients. 2 patient got superficial early infection for which debridement was done at 15 days and that was cured at 3 months. 1 patient develop vascular insufficiency as arterial clots which was repaired immediately by vascular surgeon and limb was salvaged. Postoperatively due to noncompliant to physiotherapy 3 patients develop knee stiffness, one of which undergone manipulation under anesthesia and later gain knee movement to continue ADL. Other one due to infection and stapler insitu develops stiffness. Lateron undergoes debridement and dressing, finally regain knee movement.

All patients undergoes preoperatively and postoperatively Lysholm knee score^[37] for assessment of functional outcome of each patients in a proper format. A score between 0 and 100 is generated, allowing a rating of excellent (95 to 100), good (84 to 94), fair (65 to 83), or poor (< 65). In our cases there is significant improvement in score of average 96.3 compared to 38.8 preoperatively.

DISCUSSION

It is very difficult to accurately predict the outcomes of MLKI patient due to heterogenous nature of anatomical knee injury pattern along with relative rarity of cases [2]. Different functional and clinical outcome measures, different treatment regimen reduces the validity of these study conclusions.

To offset the rarity and heterogeneity in this group, a multicentric research should be conduct where large volume of patient can be taken with entire spectrum of injury pattern and treated by experience surgeons.

In our study, most of patients are in age group of 20-50 years constituting 83.34% of our total cases which is

Table 3: Age Distribution

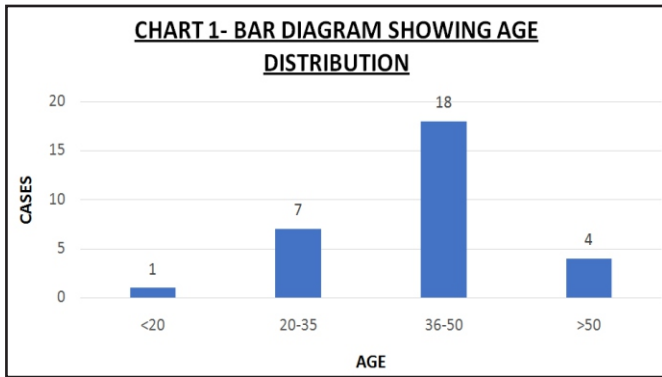


Table 4: Sex Distribution:

SEX	NO. OF CASES (n)	PERCENTAGE (%)
MALE	22	73%
FEMALE	8	27%

Table 5 : Mode of Injury

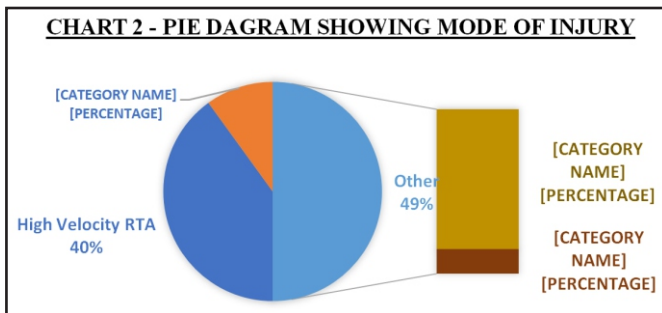


Table 6: Mechanism of Injury

MECHANISM OF INJURY	NO. OF CASES (n)	PERCENTAGE (%)
FLEXION INJURIES	24	80%
EXTENSION INJURIES	6	20%

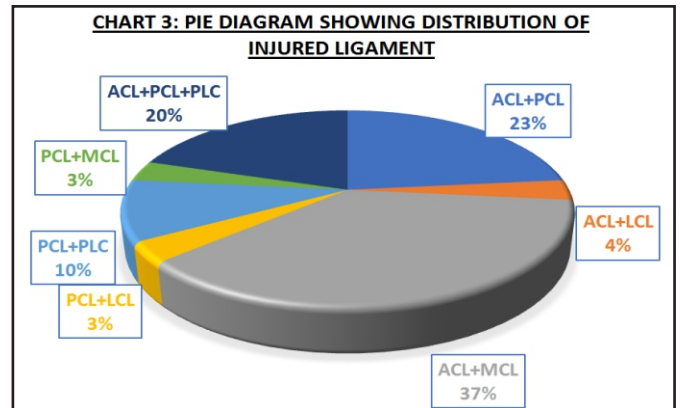
Table 7: Complications

COMPLICATION	NO. OF CASES (n)
WOUND INFECTION	2
VASCULAR INJURY	1
NERVE UNJURY	0
KNEE STIFFNESS	3

Table 8: Functional Outcomes (LYSHOLM SCORE)

	LYSHOLM SCORE
PRE- OP (Avg)	38.8
POST- OP (Avg)	96.3

Table 9: Ligament Injured and Repair/Reconstructed



LIGAMENT INJURED	NO. OF CASES	PERCENTAGE
ACL + PCL	7	23.34%
ACL + LCL	1	3.33%
ACL + MCL	11	36.67%
PCL + LCL	1	3.33%
PCL + PLC	3	10%
PCL + MCL	1	3.33%
ACL + PCL + PLC	6	20%
TOTAL	30	

consistent with other similar studies of MLKI with reference to age.

1. Gender distribution-

Male patients constituted 73% of the cohort compared to female patients with only 27%. Therefore men more commonly involved than females.^[1,20]

2. Mechanism of injury-

MLKI can be caused by both high velocity injuries like RTA as well as low velocity injuries like domestic falls and sports related injuries. In this study the most common cause of MLKI was RTA constituting 80%. This was followed by domestic falls and sports related injuries in 20% of patients. So there were more prediliction to high velocity injuries over low velocity. This mechanism of injuries correlates with other mentioned in other previous studies on MLKI.^[1,21]

3. Pattern of injury-

There is diverse opinions regarding the most common combination of injured ligaments. Maotshe G et al.^[1] study of 303 patients showing cruciates with medial sided injuries as the most common pattern, where as in Robertson et al.^[22] and Berker et al.^[23] it is the lateral sided injuries along with cruciate.

In our study, the distribution is as shown in Table 9 and ACL with medial sided injuries is the most common pattern with 36.67% of total cases followed by ACL plus PCL injuries constituting 23.34% of the total cases.

4. Early vs Late surgery:

Consensus regarding timing of surgery is always debatable. Patients undergoing surgery within 3 weeks of injury shown to have higher return to sports as compared to those who undergo surgery in the chronic stage (>3 weeks usually at a mean of 51 weeks). However, the functional outcome scores were reported to be similar in both the groups.^[2,24]

5. Repair versus reconstruction:

Recent studies have demonstrated unacceptable high failure rates with isolated repair of damaged collateral ligaments. Although delayed reconstruction demonstrates improvements over early repair. Collateral stability achieved best if treated in early phase and healed more effectively if central cruciate stability is achieved simultaneously.

Stannard et al.^[25] and Levy et al.^[2] showed better outcomes with the PLC reconstructions as compared with their repairs. The average failure rate was found to be 7.5% after reconstruction and 38.5% after repair with similar mean Lysholm and IKDC scores at final follow-up.^[26] Owens et al performed primary repair of complete MCL avulsion in 11 patients with knee dislocation, with excellent valgus stability reported in all patients.^[27] In conclusion, the reconstruction has a lower failure rate than repair for PMC injuries in multiligament injured knees, similar to the findings for the PLC.

Reconstruction of both the ACL and PCL has become popular, with good outcomes reported using autograft, allograft, and synthetic ligaments. PCL reconstruction has been described using both single and double bundles, as well as inlay versus transtibial techniques.^[29,30,31] Mariani et al looked at the outcome in groups of patients with ACL and PCL injuries with three surgical techniques: both cruciates repaired, both cruciates reconstructed, or ACL reconstruction combined with PCL repair.^[28] All three groups had very similar IKDC and Lysholm Scores.

Literatures comparing repair vs reconstruction of both cruciates, showing direct repair had statistically significant increased rates of posterior sag and lower rates of return to preinjury level, whereas both cruciate

reconstruction group had increased return to sport rates. In conclusion operative repair when feasible but mostly reconstruction is better treatment option than conservative treatment.

The optimal strategy is likely one where both early repair and reconstructive techniques are combined to allow immediate stability and early mobilization.

6. Single stage vs stage repair or reconstruction:

Another debatable topic is whether to treat it in single stage or in staged manner. Stage surgery includes collateral ligament repair or reconstruction in acute stage (<3 weeks) followed by supervised rehabilitation for 3–6 weeks. In Second stage ACL and PCL reconstruction is performed once Knee Rom is > 100 degree.

There are various studies by Jari and Shelbourne^[32] Tay and MacDonald^[33] and Liowet al^[34] advocating staged reconstruction, this study shows equally better outcomes with single stage multiligament reconstruction. Tao J et al.^[35] and Jiang et al.^[36] supporting the single stage treatment of MLKI. Single stage surgery lead to arthrofibrosis, infection and stiffness as complications. In our study 3 patients develops knee stiffness. Single stage MLKI management has added advantages like less number of admissions to hospital and also facilitates early initiation of rehabilitation including early resumption of daily activities and sports.

7. Outcome Analysis :

Previous studies incorporates variety of knee-specific scores and this nonuniformity makes comparison between studies very difficult. Multicentered research is needed to clearly define superiority of specific knee scores.

Overall, the mean pre surgery Lysholm scores were 38.8 and the postsurgery mean Lysholm scores were 96.3. This is in consensus with other studies supporting surgical management of MLKI by Maotshe et.al,^[1] Tao J et.al^[35] and JiangWet al.^[36] hence surgical management provides superior outcomes in MLKI. There is no statistically significant difference in outcomes of two ligament injury reconstruction and three ligament injury reconstruction.

CONCLUSION

This article guides young surgeons, whenever feasible MLKI should treat as early as possible with single stage repair or reconstruction and put on assisted rehabilitation

to achieve good outcomes. Multicentric research should be conducted with large volume of patient with entire spectrum of injury pattern to evaluate outcome study.

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A Retrospective Cross Sectional Study on Ectopic Pregnancy: A Two Year Study

Dr. Sneha*, Dr. A.U. Mehta**, Dr. Prerak Modi***, Dr. Rinky Agrawal****

*Third year resident, **Head of department, ***Associate Professor, ****Assistant Professor, OBGY, BJMC, Ahmedabad

KEY WORDS : Ectopic, Emergency, Pregnancy, Life-Threatening

ABSTRACT

BACKGROUND : Ectopic pregnancy is a life threatening condition. It is importance to diagnose it early to prevent complications. This study aims to understand the risk factors, common group age of presentation, signs , symptoms and management. This study was conducted for 2 years in Civil Hospital, Ahmedabad.

AIM : To determine the incidence, clinical features, risk factors and morbidity and mortality associated with ectopic pregnancy in a tertiary care hospital.

METHOD : A retrosceptive cross sectional study was done for years in Obstetrics and Gynecology Department, Civil Hospital, Ahmedabad from August 2019 to July 2021 for the period of 2 years.

RESULTS : 82 cases of suspected ectopic gestation were observed during the study period of two years at our institution. Total no. of delivery during the same period were 12660. The incidence of ectopic pregnancy was 0.64%. Amenorrhoea was present in 79.2% cases, pallor was seen in 81.7% of cases. Ultrasonography reported 47.2 % of them as ruptured, 24.3% unruptured.

CONCLUSION : Early diagnosis of ectopic is very crucial for appropriate conservative medical management. Clinicians should be suspicious of ectopic pregnancy in any woman of reproductive age presenting with abdominal or pelvic symptoms.

INTRODUCTION

Ectopic pregnancy is a life-threatening condition that every practicing obstetrician and gynecologist encounters in his or her practice.

It greatly endangers the life of the woman and also her future fertility by causing damage to the fallopian tubes and/or ovary.

The word ectopic is from Greek; 'EX' and 'TOPOS' meaning "out of place". It is defined as any intra or extra uterine gestation in which the fertilized ovum implants at an aberrant site inconducive to growth and development.[Fallopian tube: ampullary (79.6%); isthmic (12.3%); fimbrial (6.2%), Ovary (0.15%) and abdominal cavity (1.4%)] or in an abnormal position within the uterus cornual (1.9%), cervical (0.15%). Highest percentage (98.3%) of ectopic pregnancies occur in the fallopian tubes.

Risk factors like previous ectopic pregnancy, tubal corrective surgery, tubal sterilization, intrauterine devices, documented tubal pathology, infertility,

assisted reproductive techniques, PID, smoking, prior abortions, multiple sexual partners and prior delivery have been implicated in the development of the ectopic pregnancy.³

This retrospective analysis was done to determine the incidence, clinical features, risk factors and morbidity and mortality associated with ectopic pregnancy in a tertiary care hospital.

METHODS

This study was conducted in the department of obstetrics and gynaecology, B.J Medical College, Ahmedabad from august 2019 to July 2021 for the period of 2 years. The case sheets of the patients with ectopic pregnancy were traced through the labour ward registers and operation theatre registers. Information regarding the total number of ectopic pregnancies in the study period, details of demographic characteristics, clinical symptoms and signs, diagnostic tools used, treatment, risk factors for the ectopic pregnancy as well as associated morbidity and mortality were obtained.

Correspondence Address : **Dr. Sneha**
Flat No.E-304, Dwarkesh Residency Farm, Gandhinagar-382016.
E-mail : sneha.shilu17@gmail.com

On admission detailed history and clinical evaluation done. Clinical evaluation included general examination of patient- including presence of anaemia, shock, restlessness, cold extremities, pulse, respiration, blood pressure, temperature and cardiovascular and respiratory systems; abdominal examination- for presence of mass, signs of free fluid in peritoneal cavity, guarding, rigidity, tenderness and Vaginal examination –for presence of bleeding, its nature, colour of the vaginal mucosa, position of the cervix, tenderness on movement of the cervix, size of the uterus, mobility and consistency, presence of mass and/or tenderness in any of the fornices.

On admission after a detailed examination, a sample of blood was drawn for Blood grouping, Rh typing and cross-matching to arrange blood for transfusion. Investigations like Hb%, HCT, routine blood tests as advised by anaesthesiologists; TLC, DC, ESR if necessary; urine pregnancy test and ultrasonography were carried out.

In acute cases with the typical symptoms i.e. amenorrhoea, pain and bleeding which was confirmed by USG (wherever possible) followed by laparotomy.

Patients in shock were managed and taken for surgery.

Blood transfusion was given intra-operative or postoperative as per the r observation and taken for laparotomy subsequently.

Laparotomy were performed under either spinal or general anaesthesia. Abdomen was opened with suitable incision. The site of ectopic gestation, status of the fallopian tube, contralateral tube, ovaries and uterus was noted. As majority of the patients had ruptured tubal gestation, a decision for removal of the tube i.e., unilateral salpingectomy was made. Salpingectomy was combined with contralateral tubectomy in patients who did not wish to conceive. In cases with obvious pathological findings on the opposite side, the diseased adnexa were removed.

Prophylactic antibiotics were given to all patients at the time of induction of anaesthesia. Patients were followed up in the post-operative period with special attention to the development of fever, abdominal pain, distension of the abdomen and wound sepsis. Patients were discharged with an advice to come for follow up after a week.

RESULTS

82 cases of suspected ectopic gestation were observed during the study period of two years at our institution. Total

no. of delivery during the same period were 12660. The incidence of ectopic pregnancy was 0.64%. The classical history of amenorrhoea, pain abdomen and vaginal bleeding was present only in 51.2% cases in the present study.

Presence of shock was seen only in 10 cases (12.1%). Acute lower abdominal pain was the most common presenting feature in 96.3% of the cases

Table 1: Incidence of ectopic pregnancy

Total Number of Ectopic	Incidence
82	0.64

Table 2: Ectopic Pregnancy in Relation to Age

Age group	No. of cases	Percentage
15-20	2	2.4
21-25	24	29.2
26-30	23	28.0
31-35	21	25.6
35-40	9	10.9
41-45	3	3.6
Total no of cases	82	100

The study group includes maternal age ranged from 15 years to 45 years, the youngest being 18 years and oldest was 42 years.

Table 3: Distribution of cases based on parity

Parity	No. of cases	Percentage
Nulliparous	13	15.8
1	27	32.9
2	32	39.0
3	10	12.1

Table 4: Distribution of the cases by socio-economic status

According to Kuppuswamy's classification, 47 patients (57.3%) belonged to low socio- economic status and 35 patients (42.6%) belonged to medium socio-economic status and none belonged to high socio- economic status.

Socio economic status	No. of cases	Percentage
Low	47	57.3
Medium	35	42.6
High	0	0
Total	82	100

Table 5: The interval between last pregnancy and ectopic pregnancy

The study showed that as the interval between pregnancies increases, the incidence of ectopic pregnancy also increases. In this study, when the interval between pregnancies was >5 years, the incidence of ectopic pregnancy was 39%. While in 13 cases (15.8%) it was the first pregnancy.

Interval	No. of cases	Percentage
Nullipara	13	15.8
1-2 years	8	9.7
3-5 years	29	35.3
5+ years	32	39.0
Total	82	100

Table 6 : Mode of presentation

The typical triad of amenorrhoea, pain abdomen and bleeding was observed in 42 (51.2%) cases. Abdominal pain was the most significant symptom in 79 (96.3%) patients.

Symptom	No. of cases	Percentage
Amenorrhea	65	79.2
Pain in abdomen	79	96.3
Bleeding	67	81.7

Table 7: General physical examination

Symptoms	No. of cases	Percentage
Pallor	67	81.7
Shock	10	12.1
None	5	6.0

Table 8 : Site of ectopic

On surgery, 78 cases were found to be tubal. There was one case each of ovarian and secondary abdominal pregnancy and two cases were cornual. 48 cases had pathology in right side and in 34 cases the pathology was in left side. Thus, ectopic pregnancy occurred more commonly in the right side.

Site	No. of cases	Percentage
Tubal	78	95.1
Ovary	1	1.2
Cornual	2	2.4
Primary abdominal	1	1.2

Table 9: Condition on laparotomy

There were 39 cases (47.2%) of ruptured ectopic on surgery. Out of which 14 were tubal rupture. 28 cases (27.8%) were unruptured and 14 cases (23.6%) presented as tubal abortion. There was one case of secondary abdominal pregnancy.

Condition	No. of cases	Percentage
Ruptured	39	47.2
UnrupturedT	28	27.8
ubal abortion	14	23.8
Secondary abdominal	1	1.2

Table 10 : Uterine size

Majority of the cases had normal uterine size 74 (90.2%). It was found increased in 8 (10.8%) cases only.

Uterine size	No. of cases	Percentage
Normal	74	90.2
Increased	8	10.8

Table 11: Urine pregnancy test

Urine pregnancy test is a simple test which helped in rightly diagnosing cases of ectopic pregnancy. It was negative in 2 (2.43%) cases while positive in 80 (97.5%) case.

Urine pregnancy test	Positive	Negative
No. of Cases	80	2
Percentage	97.5	2.43

Table 12: Distribution by ultrasonography

Ultrasonography was done 62 cases (75.6%) were ruptured and 20 (24.3%) were unruptured in ultrasonography, fluid in POD detected in 72 cases (87.8%).

Ultrasonographic findings	No. of cases	Percentage
Ruptured	62	75.6
Unruptured	20	24.3
Fluid in POD	72	87.8

Table 13. Distribution by risk factor

	No. of cases	Percentage
Previous induced abortion	8	9.7
Pelvic inflammatory disease	24	29.2
Ovulation induction	6	7.3
IVF	6	7.3
Previous spontaneous abortion	6	7.3
Previous ectopic	2	3.6
H/O IUCD	2	3.6
H/O Tubectomy	3	3.6
No factor found	43	52.4

DISCUSSION

Ectopic pregnancy can occur at any age. A study by Rose et al found maximum cases in age group of 21-30 years (43%) which corroborated with the present study (55.6%).

In the present study, the maximum incidence of ectopic occurred between, parity 0 and 3. In the study by Rose et al, as parity increases there is a decrease in the incidence of ectopic pregnancy. Munro Kerr and Eastman are of the opinion that there is no specific relation between parity and ectopic According to ICMR Multicentric Case Control Study (1990) of ectopic pregnancy, majority of women were young and had low parity.

No specific sign or symptom can be said to be pathognomonic of ectopic gestation. The classical history of amenorrhoea, pain abdomen and vaginal bleeding was present only in 51.2% cases in the present study.

Presence of shock was seen only in 10 cases (12.1%). Acute lower abdominal pain was the most common presenting feature in 96.3% of the cases. Amenorrhoea was present in 79.2% cases, incidence is comparable to Rose et al² and Pendse et al.¹⁰ Oumachigui et al reported absence of amenorrhoea in 23% cases.

Vaginal bleeding was present in 81.7% comparable to 65.4% and 66.6% in study by Rose et al and Pendse et al respectively. Other symptoms were giddiness, nausea, vomiting and syncopal attacks.

On general examination, pallor was seen in 81.7% of cases similar to other studies by Rose et al and Pendse et al having incidence of 70.9% and 84.5% respectively.^{2,10} Ultrasonography reported 47.2 % of them as ruptured, 24.3% unruptured. Most of our patients were referred

from outside with diagnosis of ruptured ectopic pregnancy. So, our treatment modality was surgical. On surgery 48 cases had pathology in right side and in 24 cases the pathology was in left side. Thus, ectopic pregnancy occurred more commonly in the right side.

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CASE REPORT

Acute ischemic stroke during the convalescent phase of asymptomatic COVID-2019 infection in young male

Dr. Zubin Shah*, Dr. Meet Raval* ,Dr.Heli Shah **,Dr. Sudhir V. Shah ***

*DM Neurology Resident, ** Consultant Neurologist, *** Professor and HOD Department of Neurology
SVP Hospital and Sterling Hospital Ahmedabad

KEY WORDS : Young Stroke , Post Covid Status

ABSTRACT

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) initially most appreciated for its pulmonary symptoms, is now increasingly recognized for causing multi-organ disease and stroke in the setting of a hyper-coagulable state. Acute ischemic stroke (AIS) has not been described as late sequelae in patients without respiratory symptoms of COVID-19. Here we report a case of 15 year old male with post COVID-19 status who developed acute malignant middle cerebral artery infarction due to occlusion of left terminal internal carotid artery, left middle cerebral artery stem and A1 segment of left anterior cerebral artery who undergone successful intravenous thrombolysis followed by mechanical thrombectomy and decompressive craniectomy.

INTRODUCTION

The SARS-CoV-2 coronavirus was first appreciated for causing severe respiratory symptoms.^{1,2} However, reports have emerged describing extra pulmonary involvement and in particular an increased risk for venous and arterial thromboembolism in the form of acute ischemic stroke.³⁻⁵ Acute ischemic stroke (AIS) is a life-threatening central nervous system (CNS) complication of COVID-19 infection primarily mediated by inflammation, direct endothelial dysfunction, thrombin generation, and platelet activation.⁶ According to a report the World Stroke Organization, the risk of ischemic stroke during COVID-19 infection is around 5%.⁷ More alarming are the reports of acute ischemic stroke in patients younger than 50 years of age with SARS-CoV-2 infection, a patient population in which ischemic strokes are relatively infrequent but potentially disabling.^{5,8} In this case report, we describe a young patient with extensive large vessel thrombosis in the setting of recent history of SARS-CoV-2 infection.

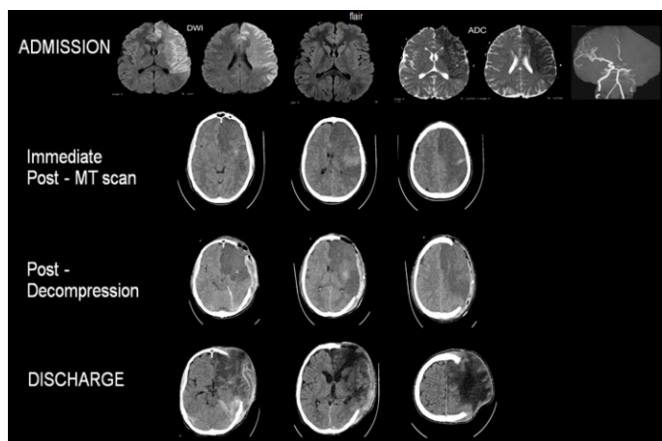
CASE

15-year-old male, without any previous comorbidities and no personal or family history of thrombo-embolic events in first degree relatives presented to emergency department with seizure, right sided hemiparesis and dysarthria within 3 hours of symptoms onset. On examination, his temperature was 98F, pulse rate was 78 beats / min, blood pressure was 150/80 mm hg,

respiratory rate was 24/min and oxygen saturation was 98% on room air. His GCS was E1M5V1, had paucity of movements on right sided limbs, left sided gaze preference and modified Rankin scale (mRS) score was 5. He had history of covid-19 infection 20 days prior to presentation. His CT scan brain was suggestive of hyperdens MCA on left side. His MRI brain was suggestive of large area of hyper-acute non-hemorrhagic infarction involving left frontal, parietal and temporal lobe, left ganglio-capsular region and left insular cortex (in territory of left MCA and ACA). His MR angiography of brain and neck region was suggestive of moderate to significant thrombotic occlusion of various segments of left ICA, left MCA and A1 segment of left ACA. His ASPECT score was <3/10 and NIHHS was 17. As patient was presented within window period, IV thrombolysis followed by intra-arterial mechanical thrombectomy was performed. Following mechanical thrombectomy partial recanalization of left MCA territory was observed. Post mechanical thrombectomy CT scan brain was carried out which was suggestive of left cerebral edema and mid line shift of 7-8 mm to the right. For which immediate left fronto-temporo-parietal decompression craniectomy was performed. Post-decompression craniectomy MD-CT scan of brain showed decrease in mid line shift (5-6 mm) and left cerebral edema with new appearance of minimal SDH along the left tentorium cerebelli. Laboratory findings demonstrated that a hemoglobin concentration was 14.2 gm/dl, total WBC counts were 14,800/cumm,

Correspondence Address : Dr. Zubin Shah
8 / Utsav App., 32/B Champaner Society, Usmanpura, Ahmedabad-380013.
E-mail : zubin158@yahoo.com

platelet counts 3,83,000/cumm, PT/INR was 14.9 sec/1.10, D-dimer was 300ng FEU/ml (normal range: <500 FEU/ml). There was no abnormality in liver and kidney function test. S.lipid profile was normal. Serum homocystein level was 13.4 micromol/L (normal range: 6.6-14.8 micromol). C-ANCA, P-ANCA, anti-phospholipid antibody profile, ANA by IF were negative. SARS-CoV-2 IgG was 28.9 AU/ml (normal range: 12-15 AU/ml). Patient was hospitalized from 18/5/2021 to 14/6/2021. He was treated with single antiplatelet, anti-epileptic drug and supportive medications and discharged with power of 2/5 on right, improved speech and mRS score of 4.



DISCUSSION

This is the youngest case reported in India with acute ischemic stroke due to large vessel occlusion in convalescent phase of COVID-19 infection, which had undergone successful intravenous thrombolysis followed by mechanical thrombectomy and decompressive craniectomy. One case series published in April 2021 highlights that adults 50 years or younger with asymptomatic or pauci-symptomatic COVID-19 infection diagnosed by positive SARS-CoV-2 serological test result may present with ischemic stroke during the convalescent phase of the infection.⁹ This finding underscores the value of SARS-CoV-2 serological testing during the etiological workup of patients who experienced AIS, given that a negative result from an RT-PCR test is expected during this period.⁹ The presence of these antibodies in younger adults coupled with the lack of traditional cardiovascular risk factors suggests an etiological association. In addition, with an estimated production and persistence of COVID-19 antibodies about 2 weeks (although ranging from 1 to 6 weeks) after the initial COVID-19 infection¹⁰, coagulopathy may likely be observed for months after the initial exposure in patients with a subclinical COVID-19 infection.¹¹ Despite

assessing a thorough stroke workup, we were unable to find an underlying mechanism except the unifying positive SARS-CoV-2 serological test. The sustained prothrombotic mechanism in the convalescent phase of COVID-19 infection is currently uncertain and is an area of active research. In addition, the mechanism of stroke in patients with asymptomatic or mildly symptomatic COVID-19 infection likely differs from the mechanism in critically ill patients in the intensive care unit who have active respiratory COVID-19 infection. Overt inflammatory response and cytokine storm seen in critically ill patients with COVID-19 infection are factors in stroke through possible endothelial injury, in which elevated D-dimer levels have been found to be associated with arterial thrombotic events in patients with active COVID-19 infection.^{12,13} However, a recent coagulation study of patients 4 months after the resolution of respiratory COVID-19 infection demonstrated normal prothrombin time, fibrinogen level, D-dimer level, and von Willebrand factor antigen compared with levels in healthy control patients.¹⁴ This finding was consistent with the results of our case. One meta-analysis study published in February 2016 highlights that modern endovascular thrombectomy added to best medical therapy more than doubles the odds of recovery compared with best medical therapy alone in patients with AIS due to anterior circulation large vessel occlusion presents within 5 hours of stroke symptoms onset.¹⁵

CONCLUSION

This case report highlights the significance of serological evidence of SARS Cov-2 antibodies as a part of etiological work up in stroke patients without presence of any traditional risk factors. It also highlights that patient with acute ischemic stroke with confirmed large vessel occlusion of the anterior circulation who are treated with intravenous thrombolysis with mechanical thrombectomy within 6 hours after symptom onset improves functional outcomes and even at very young age it is very safe.

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CASE REPORT

A 30 Weeks, Impending Rupture Ectopic Pregnancy in Rudimentary Horn

Dr. Seema Patel*, Dr. Rakesh Patel**, Dr. Jignasha Ram***, Dr. Harsh Patel***, Dr. Hetul Patel***

*Associate Professor, **Assistant Professor, ***Intern Doctor, ***Intern Doctor, ***Intern Doctor

GMERS Medical College, Gandhinagar

KEY WORDS : Rudimentary horn, Ruptured Ectopic Pregnancy, Laparotomy

ABSTRACT

Rudimentary horn is one of the rarest congenital uterine anomalies. Pregnancy in a rudimentary horn of the uterus is a rare clinical condition with a reported incidence of 1 in 100,000 to 140,000 pregnancies. It is difficult to diagnose before surgery and hazardous to maternal life as rupture of pregnant horn result in severe hemoperitoneum. The standard treatment is the surgical excision of the horn.

INTRODUCTION

Mullerian anomalies were first classified in 1979 by Buttram and Gibbons and further revised by the American Society of Reproductive Medicine in 1988. Rudimentary horn consists of a relatively normal appearing uterus on one side with a rudimentary horn on the other side. 72–85% of the rudimentary horns are noncommunicating with the cavity.¹ Unicornuate uterus with rudimentary horn may be associated with gynecological and obstetric complications like infertility, endometriosis, hematometra, urinary tract anomalies, abortions, and preterm deliveries. The clinical presentation of this entity is non specific, giving ultrasound a critical role in making the diagnosis.² Rupture during pregnancy is the most dreaded complication which can be life threatening to the mother. This case highlights the importance of early ultrasound in detecting uterine anomalies and the need for high clinical suspicion.

CASE REPORT

A 23 years old primigravida female presented at 30 weeks of gestation and was referred to GMERS General hospital Gandhinagar (Tertiary care centre) with diagnosis of abdominal pregnancy with fetal demise and hemoperitoneum from private hospital for further management at tertiary care centre.

The patient was primigravida, there was no past medical or surgical history. She had normal menstrual periods with no history of dysmenorrhoea. In her current pregnancy she had history of regular menstrual cycle and her LMP was 18/05/2021, so she was unaware about pregnancy.

Patient has chief complaint of difficulty in passing urine, vomiting and lower abdominal pain for that visited at private hospital. USG was done there suggestive of abdominal pregnancy with fetal demise and hemoperitoneum, for that referred at our tertiary care centre for further management.

On admission patient was in hypovolemic shock with severe pallor and rapid feeble pulse 140/min, her BP was 100/60 mmhg. The abdomen was tense and distended and the uterine size was not made out. Pelvic examination revealed fullness in the fornices with cervical movement tenderness. There was no vaginal bleeding. As the patient was in shock, she was taken for immediate Laparotomy after resuscitation. Her Hb was 4.4gm% at the time of laparotomy.

On Laparotomy there was hemoperitoneum, approximately 600 grams of clot and 1000-1200 ml blood in abdominal cavity noted. A normal uterus with normal ovary and Fallopian tube on right side. The pregnancy was in a rudimentary horn on left side, with a normal ovary and fallopian tube attached to it. The horn was connected to the uterus just above the cervix by thick fibrous band. There was erosion on anterior wall of Left rudimentary horn and bleeding was from that erosion. A small incision was made over the rudimentary horn and dead female fetus of 1160 grams delivered. The placenta was adherent to left rudimentary horn. The horn was then excised along with Left Fallopian tube. After achieving hemostasis abdomen was closed in layers after keeping drain. The patient was transfused with 4 units of PCV and 2 units of FFP. Her post operative recovery was good. She was later investigated for urinary tract anomalies which was found to be absent. The Patient was discharged on

Correspondence Address : Dr. Jignasha Ram
A-1304, Vertis, Science City Road, Sola, Ahmedabad.
E-mail : drseema1974@yahoo.com

forth day. A Histopathological examination was suggestive of placenta with mature chorionic villi ; Rudimentary horn attached with placenta showed myometrium with changes of hyperplasia and hypertrophy; No placental anomaly was observed.

CASE DISCUSSION

Uterine anomalies result from the failure of complete fusion of the Müllerian ducts during embryogenesis. The incidence in the general population is estimated to be 4.3%.³ The incidence of this anomaly is approximately 0.4%.³ In the majority (83%) of cases, the rudimentary horn is non-communicating.⁴ The anatomical variations of a rudimentary horn serve as the basis for the classification of a unicornuate uterus by the American Society of Reproductive Medicine (ASRM). Acien et al. performed a systematic review to analyse the classification systems for uterine anomalies and concluded that an embryological clinical classification system seemed to be the most appropriate.⁵ The case in this would be classified as class IIB according to the ASRM Figure I.

Figure I



American Society of Reproductive Medicine (ASRM) classification of uterine Müllerian anomalies.⁴

DES = diethylstilbestrol.

Pregnancy in a noncommunicating rudimentary horn occurs through the transperitoneal migration of the spermatozoon or the transperitoneal migration of the fertilized ovum⁶. The first case of uterine rupture associated with rudimentary horn was reported in 1669 by

Mauriceau⁷. The timing of rupture varies from 5 to 35 weeks depending on the horn musculature and its ability to hypertrophy and dilate. 70–90% rupture before 20 weeks and can be catastrophic⁸. As the uterine wall is thicker and more vascular, bleeding is more severe in rudimentary horn pregnancy rupture⁹. Kadan and Romano described rudimentary horn rupture as the most significant threat to pregnancy and a life-threatening situation¹⁰. The rupture occurs because of the underdevelopment of the myometrium and a dysfunctional endometrium¹¹. A rudimentary horn pregnancy can be further complicated by placenta percreta due to the poorly developed musculature and the small size of the horn; the reported incidence is 11.9%¹¹. Placenta percreta can be confirmed by a histopathology examination from as early as seven weeks¹².

Early diagnosis of the condition is essential and can be challenging. Ultrasound, hysterosalpingogram, hysteroscopy, laparoscopy, and MRI are diagnostic tools¹³. Fedele et al. have found ultrasonography to be useful in the diagnosis¹⁴. But the sensitivity of ultrasound is only 26% and sensitivity decreases as the pregnancy advances¹⁵. It can be missed in inexperienced hands as in present case. Tubal pregnancy, cornual pregnancy, intrauterine pregnancy, and abdominal pregnancy are common sonographic misdiagnosis¹⁶. There are no definitive clinical criteria to detect this life-threatening condition in case of emergency, and diagnosis can be difficult because the enlarging horn with a thinned myometrium can obscure the adjacent anatomic structures. The key for diagnosis prior to the rupture is a high index of clinical suspicion. A history of severe dysmenorrhoea may be a clue for diagnosis. However, the rudimentary horn may be underdeveloped and its endometrium nonfunctional, so dysmenorrhoea may be absent. A careful pelvic examination in the first trimester showing a deviated uterus with a palpable adnexal mass should provoke suspicion of a Müllerian anomaly. It can be confirmed by an ultrasound or MRI. Tsafir et al. suggested the following criteria for diagnosing a pregnancy in the rudimentary horn: (1) a pseudo pattern of asymmetrical bicornuate uterus; (2) absent visual continuity between the cervical canal and the lumen of the pregnant horn, and (3) the presence of myometrial tissue surrounding the gestational sac^{3,4,17}. Ultrasound sensitivity remains only 26%¹¹. The enlarging horn with the thinned myometrium can obscure the adjacent anatomical structures and the sensitivity further decreases as the gestation progresses. In this case, the diagnosis was

Figure II:- Uterus with Rudimentary horn



Figure III:- A dead female child



initially missed probably due to the advanced gestational age and a lack of clinical suspicion. MRI has proven to be a very useful diagnostic tool. Renal anomalies are found in 36% of cases¹⁵; hence it is mandatory to further assess these women.

Immediate surgery is recommended whenever a diagnosis of a pregnancy in the rudimentary horn is made. The traditional treatment is a laparotomy and the surgical removal of the pregnant horn to prevent rupture and recurrent rudimentary horn pregnancies. In recent years, several cases have been treated successfully by laparoscopies using various techniques¹². Some authors have described systemic methotrexate administration or feticide with intracardiac potassium chloride as alternatives or adjuncts to surgery in early gestation¹². Conservative management, until viability is established, has been advocated in selected cases with large

myometrial masses. Emergency surgery can be performed at any time. In all such cases, the patient should be informed of the risks of the condition as well as their management options.⁴

CONCLUSION

Despite advances in ultrasound and other diagnostic modalities, prenatal diagnosis remains elusive, with confirmatory diagnosis being laparotomy. The diagnosis can be missed in ultrasound especially in inexperienced hands. A high index of clinical suspicion for uterine malformations early in the gestation can reduce the mortality rate, along with early intervention. Timely resuscitation, surgery, and blood transfusion are needed to save the patient. When a rudimentary horn pregnancy is diagnosed, the excision of the horn with ipsilateral salpingectomy is the recommended surgical treatment for the best prognosis. This case highlights the need for high clinical suspicion of this rare condition.

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CASE REPORT

A rare case of Cavernous Hemangioma in Lateral Rectus Muscle

Dr. Nitin Trivedi, Dr. Stuti Trivedi

Avataran Hospital, Vastrapur, Ahmedabad-380054

KEY WORDS : Cavernous hemangioma, Intramuscular cavernous hemangioma

ABSTRACT

Cavernous hemangioma is the commonest benign tumour of orbit. It is slow-growing and mostly asymptomatic. Its presence in muscle tissue is very uncommon. A case of 23 year old woman presented with a cavernous hemangioma in lateral rectus muscle in orbit. It was treated by surgical excision by Lateral orbitotomy.

INTRODUCTION

A 23 year old woman presented with discomfort in right since 6 months. There was mild blurring of vision and occasional dull aching pain in RE. There was no other complain. On examination there was mild lateral displacement of RT eyeball with full ocular movements. Cover test was normal. Visual acuity was 6/6 in both eyes without glasses. There was no proptosis or diplopia. Rest of anterior segment on both sides were normal including normal pupillary reflexes. Fundus examination did not reveal any abnormality. {fig. 1}

Fig. 1 Pre operative RE Out word Displacement



Patient had a past history of examination and management with MRI done. It was diagnosed as orbital pseudotumor by the radiologist. It was treated with Systemic corticosteroids for 1 month. Treatment had not given any results. {fig. 2}

We advised to have a CT scan of orbit {fig. 3} with contrast enhancement. It showed thickened belly of lateral rectus muscle of RT orbit with vascular mass inside. We decided to perform lateral orbitotomy. Intraoperatively we explored area near lateral muscle and found a tuft of vessels. During procedure there was leakage of dark red colour fluid suggestive of old

Fig.2 MRI RT orbital Mass

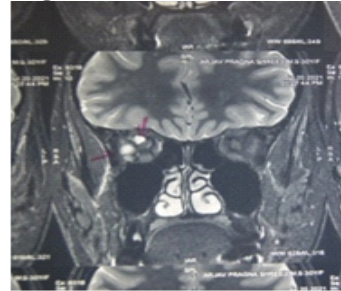
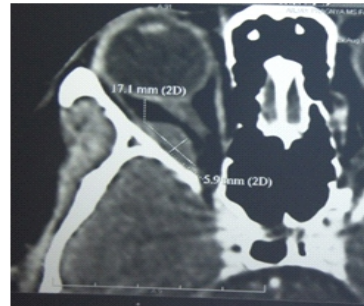


Fig 3. CT scan RT Orbit Thickened LR muscle



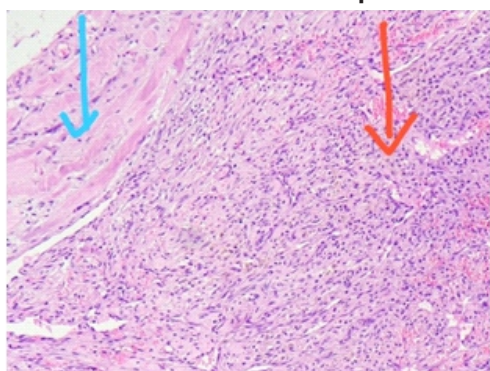
haemorrhage. Gentle dissection was carried out to separate the bundle of blood vessels. The bundle was sent for histopathological examination with H& E stain. HP report suggested cavernous hemangioma with striated muscle fibres surrounding it. {fig. 4}

DISCUSSION

Cavernous hemangiomas usually are solitary and most often occur in the lateral aspect of the retrobulbar intraconal space. Hemangiomas are benign, non-metastasizing tumors composed of hamartomatous proliferation of blood vessels, most commonly found in cutaneous and mucosal surfaces of infants and children. Those affecting skeletal muscles, also known as intramuscular hemangiomas (IMHs), are rare and represent <1% of all hemangiomas. They have a predilection for muscles of the trunk and extremities, head

Correspondence Address : **Dr. Nitin Trivedi**
49-A, Lad Society, Sandesh Press Road, Vastrapur, Ahmedabad-380054
E-mail : trivedinitinv54@gmail.com

**Fig 4. HP Image Blue Arrow-Striated Muscle
Red Arrow –Cavernous spaces**



and neck region being involved only in about 14% of the cases IMHs affecting the extraocular muscles (EOMs) are extremely rare^[3] They are rarely intramuscular. They uncommonly involve the orbital apex, but when they do, they may cause monocular vision loss due to the compression of blood vessels that supply the optic nerve. Intramuscular hemangioma (IMH) is an uncommon type of tumor, accounting for less than 1% of the total number of hemangioma tumors diagnosed.^[1] IMHs are non-metastasizing, benign hamartomatous congenital neoplasms that, after remaining unremarkable for long periods, may suddenly start to grow in the second and third decades of life. Kiratli et al. reported two cases of isolated IMH of extraocular muscles: one in a 3-year-old child with involvement of lateral rectus muscle and the other in a 40-year-old man with involvement of the medial rectus muscle. Both of them presented with proptosis and lid swelling. On histopathological examination, the child was diagnosed to have capillary type IMH and the adult man was diagnosed to have mixed type IMH.^[2-4] A 31-year-old pregnant woman presented with subacute painful proptosis due to an orbital apex mass arising from the right medial rectus muscle.^[5]

On CT images, cavernous malformations typically are well circumscribed, round or ovoid, homogeneously hyper-attenuating, intraconal lesions. They occasionally contain microcalcifications (phleboliths) and may produce expansion of the orbital walls. The lesions may displace adjacent structures but do not invade them. At multiphase dynamic contrast material-enhanced CT, poor enhancement is noted in the early arterial phase because of the low-flow arterial supply; contrast material does not fill the central part of the lesion until the late venous phase^[6]

A young 25 year lady presented with complains of Right eye pain, dimness of vision for 6 months there was mild discomfort in right eye. On examination, right eye was minimally pushed out. Visual acuity was Right eye 6/6 without glasses and left eye also had 6/6 vision without

glasses. Anterior segment both eyes were normal .Ocular movements were full without complain of reported to occur in the head and neck musculature (e.g. masseter, trapezius, sternocleidomastoid, mylohyoid, temporalis muscles) Intramuscular angioma (the preferred term for lesions formerly known as intramuscular hemangiomas by WHO Tumors of Soft Tissue and Bone Classification, 5th edition 2020) (IA) occurring in the extraocular muscles or palpebral muscles (orbicularis oculi) are extremely rare with only a few case reports in the English literature. To date, all the extraocular muscles have reportedly been involved. With the case reported herein, the medial rectus muscle appears to be the most common extraocular muscle involved. rare tumors.^[1]

The lesions are usually managed conservatively, and surgical excision is reserved for those that cause severe proptosis or optic nerve compression. Because of the inaccessibility of the small feeding arteries and the multiple collateral pathways available for recanalization, embolization therapy is not often performed.^[2-3]

CONCLUSION

Cavernous hemangiomas are of the commonest orbital tumours present in intramuscular surgical space. But its presence in the intra-skeletal muscle is quite rare. Due to its rarity and its radiological appearance as a thickened EOM can be confuse and misdiagnosed as conditions like myositis, lymphoma, muscle tumor. Its treatment is careful surgical excision .Imaging techniques like MRI can be misleading and CT can be a substantiating modality for diagnosis.

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CASE REPORT

Neonatal Chikungunya Infection with Perioral Hyperpigmentation

Dr. Chitra Prakashkar* Dr. Nirav Patel**, Dr. Meet Patel**, Nidhay Prakashkar***

*Head of The Department of Paediatrics, **Senior Resident Paediatrics, *** MBBS Student

Department of Paediatrics ESIC Model Hospital Bapunagar, Ahmedabad

KEY WORDS : Chikungunya, Neonatal sepsis, Perioral rash

ABSTRACT

Background : During outbreak of Chikungunya, Neonatal Chikungunya Infection is not that uncommon and should be suspected as closest differential diagnosis of sepsis

Case characteristics : Both babies had postnatal infection, one presented as signs and symptoms similar to sepsis, both had hyperbilirubinemia and typical perioral hyperpigmented rash after phototherapy.

Message- : Perioral Hyperpigmentation is consistent with Neonatal Chikungunya Infection

INTRODUCTION

Chikungunya fever is caused by RNA virus of Togaviridae family with genus as alphavirus. It is transmitted by Aedes mosquito. The disease typically presents with high grade fever, rash, arthralgia, malaise, body ache in adults and in neonates it can present as fever, refusal to feed, excessive cry, irritability, exaggerated jaundice and in rare but severe cases as encephalopathy, bleeding due to thrombocytopenia, multiorgan failure. The closest differential diagnosis is sepsis.

CASE 1

3 day old new born admitted in NICU with chief complaints of yellowish discoloration of eyes and skin, low grade fever 1 day, refusal to feeds. Baby was LSCS born/ CWAB/2.5kg/Male. Mother was 3Rd Gravidia with previous history of twins. Had taken treatment for Infertility in previous pregnancies. G1- LSCS /Twin Delivery, 1 male had imperforate anus, was operated but expired on 2nd day of operation. Female baby A/W. G2- again twins, both male babies IUD at approx. 16 weeks. Mother had no other significant history, was on regular follow-ups and there was no h/o fever during pregnancy. After delivery on 2nd day mother had moderate grade fever with high CRP which was treated with antibiotics. Fever responded in 2 days.

Baby was admitted in NICU, investigations were sent and started on first line antibiotics with single surface phototherapy. Baby was accepting feeds orally. On 5th day of life baby developed episodes of desaturation with

decreased activity and refusal to feeds. CRP was mildly raised. As presentation was similar to early onset sepsis baby was upgraded on antibiotics with oxygen and IV fluids. Baby improved in 24 hours. On 7th Day of life baby developed hyperpigmentation over face and body predominantly around oral and nasal region. It was similar to that of chikungunya infection in new born so Chikungunya IgM was sent which came Positive. As mother also had fever postnatally, her CG IgM was also sent. It also came Positive. Later baby was fine and discharged without any complications. On follow up to 3 months baby's MRI Brain, EYE examination, Hearing examination were normal. ECHO showed small ASD. Growth and milestones are normal.

CASE 2

4 day old male new born was admitted in NICU with complaints of excessive irritability, crying and yellowness of face and body. No H/o fever. Was taking feeds. Baby was FTVD/3Kg/CWAB/AGA and was discharged after 2 days along with mother from postnatal ward. Mother had H/O mild fever on 2nd day of delivery. Treated with paracetamol. No other significant History.

Baby was admitted, basic investigations were sent and started on phototherapy with exclusive breast feeding. After 2 days of admission baby developed typical perioral and paranasal hyperpigmented rash. Repeat investigations including Chikungunya serology was sent. Septic screen was negative. CRP was high and Chikungunya IgM was positive. There was no fever

Correspondence Address : Dr. Chitra Prakashkar
OPD No. 103, ESIC Model Hospital, Bapunagar,
Ahmedabad-24

Figure : Neonatal Chikungunya Infection with Perioral Hyperpigmentation



or any other complaints. Bay was discharged on 12th DOL. Mother's Chikungunya IgM was sent and it also came positive. On follow up baby's hyperpigmentation decreased and growth and development are normal.

DISCUSSION

Chikungunya (CHIK) virus is member of genus Alpha virus in the family of Togaviridae transmitted to humans by vector like *Aedes aegypti* and *Aedes albopictus*. The incubation period ranges from 3 to 12 days. {1} The onset is usually abrupt and the acute stage is characterized by sudden onset with high-grade fever, severe arthralgias, myalgias, and skin rash. Swollen tender joints and crippling arthritis are usually evident.{2} Chikungunya fever appears to have a direct impact on pregnancy with a higher risk of abortion in the first trimester and mother-to-child transmission in the last trimester. The time of greatest risk of transmission of Chikungunya virus from mother to foetus appears during birth if mother acquired the disease few days before delivery.{3,4,5} Neonates present at 3-5 days of life with fever, excessive crying, dermatological manifestations like maculopapular rash, nasal blotchy erythema, freckle like pigmentation over Centro facial area, vesiculo-bullous lesions, apnoea, in rare but severe cases shock, DIC, and neurological manifestation like seizures, disturbed level of sensorium. Thus, Chikungunya in neonates can present with protean clinical manifestations. Clinical examination and high index of suspicion are essential in clinching the diagnosis as the presentation can mimic other commonly seen emergencies like septic shock or acute CNS infection.{6} Diagnosis is made by CHIK IgM and RT-PCR. Viral culture is the gold standard for the diagnosis of Chikungunya fever. Reverse transcription polymerase chain reaction and real-time loop-mediated isothermal amplification have also been found to be useful. Sero-diagnostic methods for the detection of immunoglobulin M and immunoglobulin G antibodies against Chikungunya virus are more frequently

used.{7} Treatment is predominantly symptomatic; however, severe cases of chikungunya may require fluid management and intensive care management and monitoring. {8} Prevention by educating the community and public health officials, vector control measures appear to be the best approach at controlling Chikungunya fever as no commercially available vaccine is available for public use in India for this condition presently. {2}

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