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Dr. Debjani Sinha Ray (Assistant Professor, Dept of Radiology

Dr. Suman Das (Visiting Surgeon, Maxillofacial Unit).

Dr. Paromita Roy (Consultant Pathologist, Tata Medical Centre, New Town, Kolkata)

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Editorial

The Future is Here

As we start a New Year the threat of yet another wave of COVID looms. The Health Ministry exudes an air of confidence that the necessary infrastructure is in place and functional; the main cause of international concern is the rapid increase in case numbers in China following relaxation of the strict lockdown policy. The common Chinese strain is omicron, which has already spread in India and to which there is thought to be considerable immunity in the population. We at the Journal hope that the combination of masks, vaccination and herd immunity will be enough to limit anysignificant impact.

In the previous two issues, Dr. Kaushik Bhaumik held forth with a fascinating view of how Big Data, Virtual Reality and Nano-medicine may completely change the way Medicine is practised. Two recent events herald that this future of medicine may have already arrived.

A 13 year old girl from Leicester, UK had undergone chemotherapy and a bone marrow transplant for acute T cell lymphoblastic leukaemia but relapsed. At the Great Ormond Street Hospital for Sick Children, London, she received experimental gene therapy. T cells from an unmatched donor underwent base editing using the CRISPR-cas9 technology and were administered to the patient. These programmed T cells proceeded to destroy all the cancerous self T cells in her body. After a month in remission a second bone marrow transplant was performed to restore her immune system. Four months down the line she remains in remission, and a further 9 patients are enrolled in the trial of this gene therapy treatment.

CRISPR-cas9 is also at the centre of the efforts by a research team, awarded a £30 million research grant by the British Heart Foundation, to develop an injectable therapy for genetic cardiomyopathy. The team leads, from Oxford and Harvard, believe they will have clinical trials up and running in the next five years.

The second major development is the release in November 2022 of the AI powered chatbot, ChatGPT, by OpenAI, a San Francisco based artificial intelligence company. The programme has already cleared the USMLE, the final MBA papers of Wharton Business Schools, and several US University law examination papers. Writing a scientific paper for a journal may soon be achieved in seconds, and detecting plagiarism may become even more difficult.

In this edition we are happy to include the abstracts from our last Institute Annual Scientific Conference. This is something which should be a matter of course, but for various reasons, Covid 19 not the least, we have been remiss in this. The ASC is a showcase for the work done by the various Departments of the Hospital, and we can justifiably take pride in the achievements of our colleagues.

Ranjan Raychowdhury, Executive Editor; Professor, Department of ENT & Head Neck Surgery, RKMSP, VIMS, Kolkata

Original Article

International Training Fellowship in The UK --- My Experience

Ramya Thota

Editors Introduction :

The author completed her postgraduation in Otorhinolaryngology from the All India Institute of Medical Sciences, New Delhi, then availed of the UK MTI scheme, through the Royal College of Surgeons of Edinburgh to pursue a training fellowship at a tertiary UK centre.

I was working as a Senior Resident in ENT at the All India Institute of Medical Sciences, New Delhi until August 2020, when I got an opportunity to become an International Training Fellow at the Department of Otorhinolaryngology, The John Radcliffe Hospital, Oxford in the UK.

This was a 2-year MTI[1] (Medical Training Initiative) fellowship under the supervision of the International Post Graduate Deanery[2] of the Royal College of Surgeons of Edinburgh.

The application and the interview process were through the NHS jobs website.

In preparation for the appointment, it was necessary that I had full GMC (General Medical Council) registration with license to practice. I sat the IELTS[3] examination - the prerequisite for registration was an overall band score of 8.5 with a band score of 8 in each of the sub-sections of the examination. I was then issued a certificate of sponsorship by the appointing institution, with which I applied for my work visa. The prerequisites took around six months to complete. However, due to the Covid 19 situation my arrival in the UK was delayed by a year.

I arrived in the UK in September 2020 and was required to self-isolate for two weeks during the pandemic. The pre-employment checks and occupational health checkup took another two weeks, and after this I could start my work.

I was given a Specialist Registrar level post and was required to perform Registrar on-call shifts with Consultant support, independent clinics and Consultant supervised theatre sessions.

The College nominated one of the Consultants as my educational supervisor (ES) and the Consultants whom I worked with were my clinical supervisors. To begin the post, I had to sign a learning agreement on the ISCP[4] (Intercollegiate Surgical Curriculum Programme) with my ES. This included setting objectives in terms of knowledge, teaching, research, clinical and operative skills and Continuing Professional Development (CPD). I worked to achieve these objectives and had regular interim reviews with my educational supervisor and assessments by the specialty lead of the College. To make sure I achieved these objectives and recorded them for College assessment I did regular work based assessments with the Consultants on the ISCP portfolio. The College also gave feedback on the aspects that I needed to improve in my portfolio after each interim review.

The initial period was challenging as it was during the pandemic. There was little regular work in the hospital and it was also difficult to

International Training Fellow, Oxford University Hospitals, UK

make friends and maintain relationships.

However, overall it was a great learning opportunity and I found that I enjoyed my work in terms of academics, surgery and research as much as I did in AIIMS, New Delhi. Working in a different health care system imparts confidence and helps you learn and practice the best of both systems. Also a demographically different population poses a different disease profile. Several infections or health problems may be more common in a geographically different patient population and this provides an invaluable learning opportunity.

The main challenges I encountered and had to tackle while adjusting to the new health care system were the language barrier (primarily due to the different accent), and understanding the cultural differences. Following the principles of Good Medical Practice[5] and seeking help from fellow colleagues and Consultants greatly helped me in overcoming these challenges.

The MTI is a good learning opportunity for the above given reasons and it is important to adapt to the local healthcare system to be successful.

References :

1. https://www.entuk.org/professionals/training/medical_training_initiative.aspx
2. http://www.rcsed.ac.uk/the-college/international-postgraduate-deanery
3. https://www.ielts.org
4. https://www.iscp.ac.uk
5. https://www.gmc-uk.org/ethical-guidance-for-doctors/good-medical-practice

Original Article

Tracheal Reconstruction Surgery --- Our Experience

Safika Zaman[1], Soumitra Ghosh[2], Amitabha Roychoudhury[3], Ushirin Bose[4]

Abstract :

Airway surgery for tracheal stenosis is available in only a few hospitals in India. The Department of ENT Head Neck surgery at the Ramakrishna Mission Seva Pratishthan, Vivekananda Institute of Medical Sciences, has recently introduced these procedures. The authors discuss their initial experience.

Introduction :

Tracheal stenosis is a consequence of injury in the subglottic part of trachea. Tracheal stenosis can be either congenital or acquired. Acquired tracheal stenosis develops mostly due to accidental trauma or as a result of post-intubation trauma. Infections like tuberculosis may rarely lead to the development of tracheal stenosis.

Patients usually present with stridor, change of voice or gradual onset respiratory distress with a past history suggestive of insult to trachea. If we are suspecting tracheal stenosis in a patient, and the patient is in respiratory distress, the immediate management is to perform a tracheostomy to secure the airway, if the patient is relatively stable, and we are suspecting tracheal stenosis, performing an endoscopic examination of the upper respiratory tract under general anaesthesia provides valuable information.

Once tracheostomy is done the person becomes tracheostomy dependent for lifetime, with loss of speech and some swallowing issues. In a young patient, a tracheostomy compromises quality of life and livelihood; with loss of speech patients lose part of their identity. Functioning optimally at the workplace becomes almost impossible.

We investigate such patients by performing endoscopic examination of the trachea under general anaesthesia, and obtaining a high resolution CT scan of the thorax and larynx with 3 dimensional reconstruction to detect multilevel stenosis (Fig 1).

Fig 1: CT Appearance of Multilevel Stenosis

If the stenosis is either Grade 1 or Grade 2, endoscopy guided balloon dilatation or LASER excision of the lesion is the treatment of choice.

Once diagnosed with Grade 3 and in Grade 4 stenosis we need to shift to an open surgical approach, such as tracheal resection and anastomosis, or partial crico-tracheal resection anastomosis, depending on the level of stenosis.

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The Mayer Cotton grading system of stenosis is the most accepted staging system for quantification of the percentage of area obstructed (Fig 2)

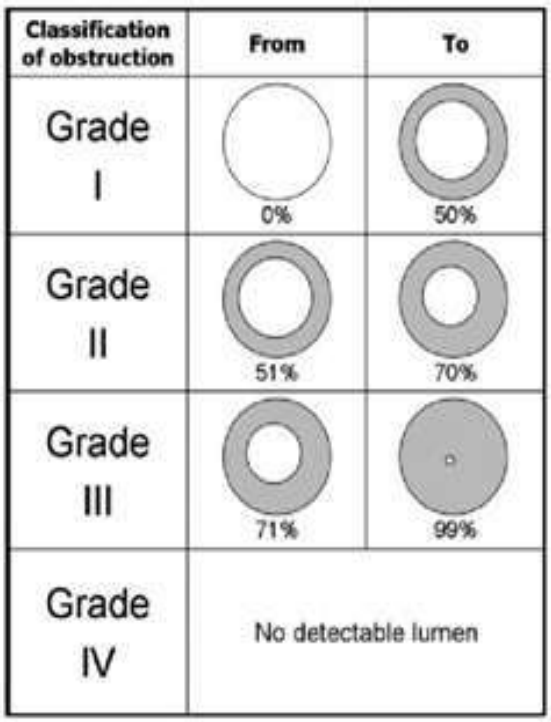

Fig 2 : Mayer Cotton Grading

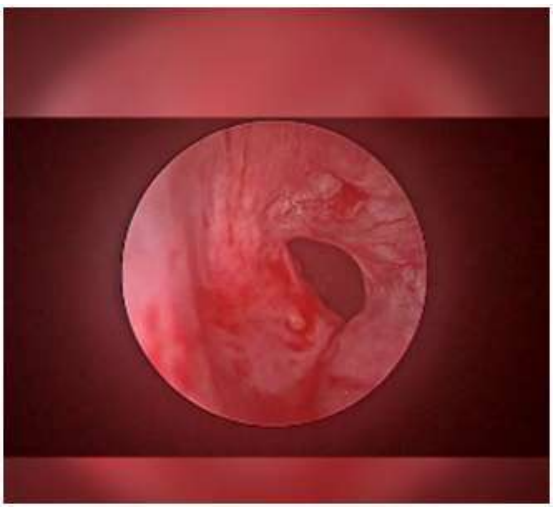

Fig 3 : Grade 3 Stenosis

The principle of the open surgical approach is to expose the stenosed segment(s) of trachea, release them from the surrounding muscle attachments, then excise the stenosed part. Once trachea is resected, and the larynx is free of muscular attachment, thyrohyoid membrane is partially resected, the larynx with trachea pulled down and the lower part of trachea pulled up. Upper and lower parts are then anastomosed with 1-0 prolene suture.

In our tertiary care hospital a total of 4 patients under went tracheal reconstruction surgery. A brief summary of the cases follows:

Case 1 - a 25 year old male patient developed subglottic stenosis secondary to intubation. The patient was living with tracheostomy for almost 18 months, before he came to our hospital. He underwent a staged procedure; the first surgery was a partial crico-tracheal resection anastomosis and the second procedure was closure of tracheostoma. The patient recovered without any complication.

Case 2 - a 28 year old male patient with poly-trauma followed by prolonged intubation developed multi-level subglottic stenosis. He underwent tracheostomy outside, and presented to us 2 months after this had been done. He first underwent balloon dilation and excision for the Grade 2 stenosis. He next underwent tracheal resection and anastomosis for the Grade 4 stenosis, with closure of tracheostoma in the same setting.

Case 3 - a 30 year old male patient who developed subglottic stenosis secondary to intubation, underwent tracheal resection and anastomosis and closure of tracheostoma in a single setting. On post operative day 3 the patient developed subcutaneous emphysema of the face, neck and arm, which gradually subsided.

Case 4 – an 18 year old male patient was involved in a road traffic accident and developed Grade 4 subglottic stenosis. Three months after the incident he underwent partial resection and anastomosis of trachea. Unfortunately, he developed wound dehiscence on the 4th post-operative day and died on the 11th post-operative day from sepsis and multi organ failure.

Case	Age / Sex	Aetiology	Presentation	Procedure	Recovery
1.	25 years Male	Prolonged intubation	After 3 months with respiratory distress and voice change	1. Crico- tracheal resection anastomosis 2. tracheostoma closure	Uneventful
2.	28 years Male	Poly trauma and prolonged intubation	After 2 months with severe respiratory distress	1. Ballon dilation + endoscopic release of band + Local injection of triamcinolone	Uneventful
3.	30 years Male	Prolonged intubation with dengue fever	After 1 month with sudden respiratory distress	Tracheal resection and anastomosis with tracheostoma closure	Subcutaneous emphysema
4.	18 years Male	Poly trauma with prolonged intubation	Gradual onset respiratory distress over a period of 3 months	Tracheal resection and anastomosis with tracheostoma closure	Died on 12th post op day

Table 1 : Summary of Experience

Post operative care of patients :

There is some specific post operative advice which needs to be followed in such cases apart from regular post surgical care. These are :

- Nasogastric tube feeding
- Maintaining head in flexed position for 8 to 10 days, to avoid any tension on the suture line due to head extension. This is commonly achieved by placing a non absorbable suture between submental skin and skin over the xiphisternum.
- Swallowing therapy

- Speech therapy
- Endoscopic evaluation of the tracheal lumen and suture site

Appropriate endoscopic assessment to evaluate the length and grade of stenosis is of great importance to plan the surgery and determine the final outcome (Fig 4). The whole approach is a team work consisting of ENT surgeon, anaesthesiologist, intensivists, speech and swallowing therapist and paramedical staff.

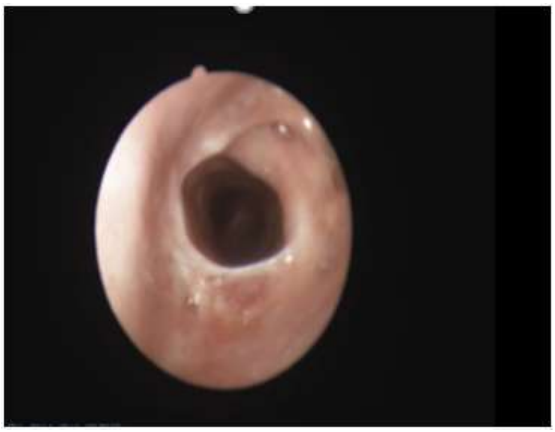

Fig 4 : Endoscopic appearance of tracheal lumen after 3 months

In India there are only a few dedicated hospitals which perform airway surgery, but the incidence of tracheal stenosis is increasing. Many patients were intubated due to the Covid pandemic, and also with better availability of care facility patients with poly trauma are surviving. The surgery is critical because it involves the airway; both anaesthesiologist and surgeon working in the same area, so at any stage of surgery things might get complicated from either side. Complications can be minor like emphysema or partial restenosis, but major complications like wound dehiscence or injury to great vessels of neck may cause death. Meticulous follow up, prompt detection of complications and timely intervention will ensure a better outcome.

The ultimate goal is a tracheostomy free life with normal voice and normal swallowing.

References :

1. Myer CM 3rd, O'Connor DM, Cotton RT. Proposed *grading system for subglottic stenosis based on endotracheal tube sizes.* Ann OtolRhinolLaryngol 1994;103(4Pt 1):319–23.
2. Hseu et al, *Subglottic Stenosis: A Ten-Year Review of Treatment Outcomes* Laryngoscope, 124:736–741, 2014.
3. Grillo et al, *Management of congenital* tracheal *stenosis by means of slide tracheoplasty or resection and reconstruction, with long-term follow-up of growth after slide tracheoplasty,* J Thorac Cardiovasc Surg 2002;123:145-52.
4. C. Chen, Y. Huang, W.-h. Ni, T.-l. Tian, Z.-m. Xu, *The outcomes of endoscopic management in young children with subglottic* stenosis, Int JPediatr Otorhinolaryngol (2017), doi: 10.1016/j.ijporl.2017.06.012.

Original Article

A Study of Histopathology of Appendicitis with Clinical Correlation

Supriya Dutta[1], Ishita Ghatak[2], Mir Hasan[3], Pranamita Ray[4]

Abstract

Introduction :

Acute appendicitis is a common surgical emergency all over the world. The incidence in developing countries is increasing due to change in life style and behaviour. Histopathological examination (HPE) remains the gold standard for diagnosis of acute appendicitis. The article describes a study conducted in a teaching hospital in Kolkata . The aim of this study was to look for the correlation between clinical and histopathological diagnoses of acute appendicitis, if any, and to evaluate the utility of HPE of the resected specimensof appendixes.

Method :

75 appendixes received in Department of Pathology from February 2021 to July 2022 were included and clinical details and data obtained from HPE were recorded. Data analysis was performedwith SPSS 21 software.

Result :

There was a significant association between the clinical and histopathological diagnoses of acute appendicitis. Ten cases from the appendixes not showing acute appendicitis on HPE showed unusual pathologieslike carcinoid, appendiceal neuroma, low grade mucinous neoplasm, parasite, etc. So the results re-established the utility of gold standard HPE.

Key words :

Appendicitis, Carcinoid, Mucocele, Low grade mucinous neoplasm, Enterobius vermicularis

Introduction :

Appendicitis accounts for the most common abdominal emergency and appendicectomy is a routinely performed surgery all over the world.[1] The incidence of appendicitis is increasing in India and other developing countries, mainly in urban cities due to increased acceptance towards western diet.[2] Appendicitis occurs commonly in children and young adults with a lifetime risk of 7%.[3] In spite of all the recent advancements, clinical diagnosis of acute appendicitis is accurate in only 60-80% of cases.[4] Therefore, histopathological examination stays the gold standard for confirmation of appendicitis.

The aim of present study was to evaluate the correlation between clinical and histopathological diagnoses of acute appendicitis and the utility of histopathological examination.

Materials and Methods :

This study was carried out in the Department of Pathology of a tertiary care Teaching Hospital in Kolkata. A total of 75 appendicectomy specimens were received in the histopathology section, Department of Pathology, over the period of 18 months from February 2021 to July 2022. All emergency appendicectomies and interval appendicectomies done for cases of clinically suspected appendicitis were included. Appendices resected as a part of intestine in surgeries other than appendicectomy for clinically diagnosed appendicitis, were excluded. The relevant clinical data was retrieved and gross findings were noted. Specimens were fixed in 10% formalin, routine

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tissue processing and paraffin embedding was done and 5 micrometre thickness sections obtained, Haematoxylin and Eosin stain was used for microscopic examination of the sections. Histopathological diagnoses were reviewed by senior pathologists.

The data compilation was done in Microsoft Office Excel. Analysis was done with IBM SPSS 21.

Results :

In total 75 appendixes were evaluated during the study period.

Clinical diagnosis of acute appendicitis	Histopathological diagnosis of acute inflammation of appendix		Total
	Present	Absent	
Present	29	16	45
Not present	2	28	30
Total	31	44	75

The sensitivity and specificity of clinical diagnosis of acute appendicitis were 93.55 % and 63.64 % respectively. The positive likelihood ratio was 2.57 and negative likelihood ratio was 0.1. Positive predictive value was 64.44 % and negative predictive value was 93.33 %. Positive likelihood ratio was 2.57. Negative likelihood ratio was 0.1.

Chi sq 22.45

df-1

P value was 0.0000021.

So clinical diagnosis of acute appendicitis was significantly associated with a histopathological diagnosis of acute appendicitis.

As shown in the Table, 31 cases were diagnosed as acute appendicitis by histopathological examination (HPE). Of those 2 cases were not diagnosed as acute appendicitis clinically. HPE showed mild acute inflammation in the form of few polymorphs in the muscle layer. The absence of clinical features of acute appendicitis were probably explained by the mild inflammation in those 2 cases.

On the other hand, 44 cases did not show acute appendicitis on HPE. Of those 2 showed fibrous obliteration of appendix or appendiceal neuroma. One showed carcinoid-neuroendocrine tumour grade 1. Two cases showed noncaseating granuloma, one case showed *Enterobius vermicularis* infection. One case showed long standing chronic inflammation and haemorrhage. Another case showed ill-formed foreign body granuloma. 1 case showed mucocele and another case showed low grade mucinous neoplasm of appendix.

The remaining 34 cases showed reactive lymphoid follicular hyperplasia without significant acute inflammation. These were diagnosed as recurrent appendicitis.

Of the total 44 cases 16 had positive clinical features of acute appendicitis and clinically were diagnosed as acute appendicitis. These cases on HPE showed reactive lymphoid follicular

hyperplasia and were diagnosed as recurrent appendicitis. The luminal obstruction caused by lymphoid hyperplasia probably caused the symptoms clinically mimicking acute appendicitis.

Discussion :

A study conducted by Oguntola et al shows out of the 238 resected appendix, 211 (88.7%) had histopathology findings consistent with appendicitis which was variously reported as acute suppurative appendicitis, transmural inflammation of the appendix with or without fecolith and gangrenous perforated appendix. Four cases of fibrous obliteration of the lumen of the specimen without evidence of inflammation were reported. Approximately 1.7% of the 238 specimens were unusual pathologies other than inflammation of the appendix and two mucinous lesions were reported. One of the findings suggestive of mucinous cystadenoma was reported as "specimen is covered with fibrous exudate. A nodule of 10 mm in maximum dimension is seen. Focally dilated appendiceal lumen is lined with mildly atypical epithelium which is thrown into convoluted folds. Mucin extravasation with a single gland within tissue is seen all suggestive of cystadenoma with low grade dysplasia associated with acute appendicitis. One case of carcinoid tumour at the tip of the appendix which was synaptophysin and chromogranin positive was reported. The negative appendectomy rate (NAR) was 11.3%. The female sex accounted for 59.3% of the negative appendectomies. Adults (>16 years) represented 77.8% of the negative appendectomies.

Appendicitis can be of the obstructive or non-obstructive type. Luminal obstruction is the main factor in acute appendicitis and some of the common classical obstructive lesions are fecolith, lymphoid hyperplasia and foreign bodies. Some unusual factors include parasitic infestations like enterobiasis, ascariasis, bacterial infections like tuberculosis or a tumour as carcinoid, primary/secondary adenocarcinoma, lymphoma, gastrointestinal stromal tumour.[5]

Clinical features are abdominal discomfort, pain and anorexia. Pain usually starts in periumbilical or epigastric region and then localizes to right lower quadrant subsequently. Nausea, vomiting may occur but usually are self-limited. Most commonly McBurney's point tenderness is present or may be different according to different anatomical location. The temperature is usually normal or mildly raised-99° to 100.5°F. A temperature > 101° F is suggestive of perforation. Tachycardia develops with rising temperature. Rigidity and tenderness are marked as perforation develops and perforation is unusual before 24 hours of onset of symptoms but is very frequent after 48 hours.

The appendix is an organ of gut associated lympho-epithelial tissue.[6] It consists of a large number of repeating units - an apical dome, a large basal lymphoid follicle with a germinal centre and laterally extending thymus dependent areas. The dome epithelium consists mainly of columnar absorptive cells and of specialized follicle associated epithelial (FAE) cells or M cells. The dome epithelium normally has large number of lymphocytes, smaller numbers of histiocytes and plasma cells. Macrophages and M cells are involved in processing and presenting antigens to lymphocytes. The mucosal glands are much less closely packed than colon.[7] Normal function of appendix probably helps suppress potentially destructive humoral antibody responses while promoting local immunity.[6]

On microscopy, in acute appendicitis, proliferation of neutrophils in the muscularis propria is seen establishing the diagnosis (Figure1). The degree and extent of inflammation are directly proportionate to the severity and duration of the disease. As this condition progresses, extra appendiceal fat and surrounding tissues become involved in the inflammatory process.[7]

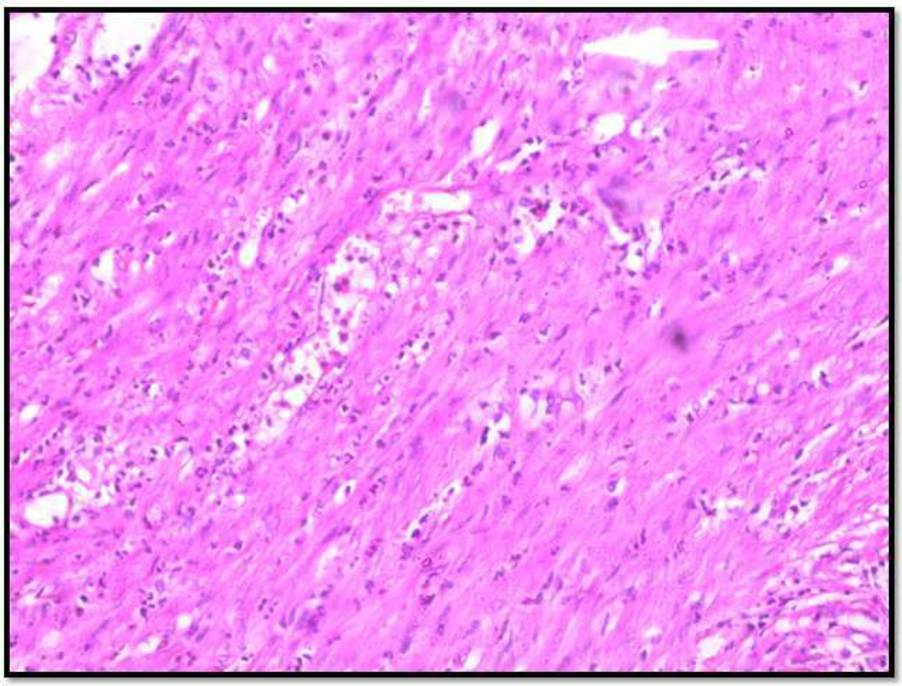

Figure 1 : Neutrophils in muscularis propia (H&E 40x)

In this study, 75 appendices were examined histopathologically. Histopathology showed acute appendicitis in 31 cases. The remaining 44 cases showed no evidence of acute inflammation. Thirty seven patients were male and 38 patients were female. Fifty cases were adult. The remaining 25 cases were in the age group of = 18 years. Of the 31 cases with acute appendicitis, 29 cases showed clinical symptoms of acute appendicitis. The remaining 2 cases were not having clinical symptoms of acute appendicitis.

Of the 44 cases without acute inflammation, 16 cases were diagnosed as acute appendicitis clinically. The remaining 28 cases were clinically negative for acute inflammation. 16 cases were interpreted as acute inflammation most likely due to symptoms caused by luminal obstruction due to reactive lymphoid follicular hyperplasia. Ten cases showed unusual pathologieson HPE, including 2 appendiceal neuroma, 2 granulomatous inflammation, 1 carcinoid extending through muscle layer, 1 mucocele and 1 low grade mucinous neoplasm of appendix. Another case showed chronic long-standing inflammation and haemorrhage and another one showed heavy chronic inflammation with ill formed foreign body granuloma. The other case showed *E.vermicularis* infection.

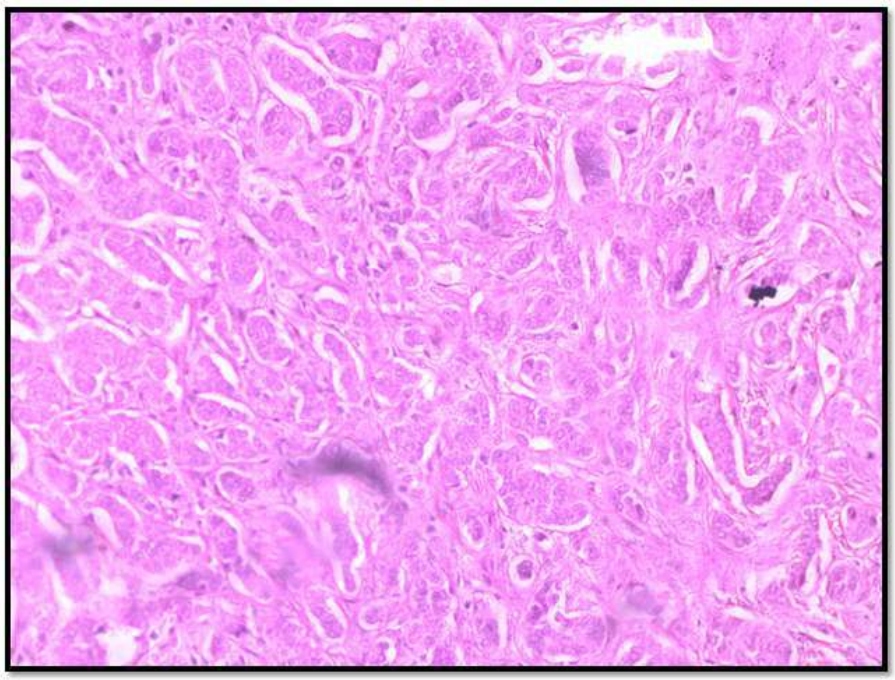

Figure 2 : Carcinoid - (H&E 100x)

In this study, sensitivity and specificity of clinical diagnosis were 93.55 % and 63.64 % respectively. The positive likelihood ratio was 2.57 and negative likelihood ratio was 0.1. Positive predictive value was 64.44 % and negative predictive value was 93.33 %. P value was 0.0000021. Hence clinical diagnosis of acute appendicitis was significantly associated with histopathological diagnosis of the same.

Conclusion :

This study was done in a tertiary care teaching hospital in Kolkata from February 2021 to July 2022. Only 31 of the population of 75 patients had acute inflammation on histopathology. 10 cases had pathologies which were unusual, including E vermicularis infection, mucinous neoplasm, carcinoid, granuloma, etc. Those caseswere in the group without acuteappendicitis on histopathology (44 cases). Remaining 34 cases showed lymphoid follicular hyperplasia without significant acute inflammatory features. These cases probably had luminal obstruction and in turn clinically resembled acute appendicitis.

The clinical diagnosis of acute appendicitis was significantly associated with gold standard-histopathologic diagnosis of the same. HPE of appendixes revealed unusual pathologies in 10 cases out of total 75. These findings reestablished the utility of gold standard HPE.

Acknowledgement :

We sincerely express our gratitude to Prof. R. Raychowdhury for his valuable suggestions and opinion in making this article of original research.

References :

1. Marudanayagam R, Williams GT, Rees BI. Review of the pathological results of 2660 appendicectomy specimens. J Gastroenterol. 2006 Aug;41(8):745-9. doi: 10.1007/s00535-006-1855-5. PMID: 16988762.
2. Oguntola AS, Adeoti ML, Oyemolade TA. Appendicitis: Trends in incidence, age, sex, and seasonal variations in South-Western Nigeria. Ann Afr Med. 2010 Oct-Dec;9(4):213-7. doi: 10.4103/1596-3519.70956. PMID: 20935419.
3. Turner JR. The Gastrointestinal tract.Kumar V, Abbas K, Fausto, Aster J(eds). Robbins and Cotran. Pathologic basis of disease.8th ed. (2010) Saunders: Philadelphia.870-1.
4. Fergusson JA, Hitos K, Simpson E. Utility of white cell count and ultrasound in the diagnosis of acute appendicitis. ANZ J Surg. 2002 Nov;72(11):781-5. doi: 10.1046/j.1445-2197.2002.02548.x. PMID: 12437687.
5. O'Connell PR. The vermiform appendix. In: Russell RC, Williams NS, Bulstrode CJ. editors. Bailey and Love's Short Practice of Surgery.26th ed London: Arnold Hodder;2010.p.1203-18.
6. Bockman DE. Functional histology of appendix. Arch HistolJpn. 1983 Jun;46(3):271-92. doi: 10.1679/aohc.46.271. PMID: 6357136.
7. Barbara Young, Geraldine O'Dowd, Phillip Woodford. Wheater's Functional Histology. A Text andColour Atlas.6th Edition. Churchill Livingstone. 2014, Philadelphia.

Original Article

Headache in Pregnancy

Sohini Chaudhury[1], Sukanta Misra[2]

Abstract :

Headache is common during reproductive age and needs special care if complained during pregnancy. The causes can be primary as well as secondary, the latter being a symptom of a life-threatening condition. Early diagnostics and special attention by identifying 'red flags' is important for the maternal and fetal well-being. Therapeutic strategy for primary headaches should be non-pharmacological, however treatment with medications should not be postponed when deemed necessary. A well-considered choice is key to take into account possible risks and benefits of the treatment modality.

Keywords :

Pregnancy, Headache, Migraine, Complications, Treatment

Headache, one of the most common symptoms in the general population is often a frequent reason for neurology consultation.[1] The 2013 data from the Global Burden of Disease (GBD), established headache disorders collectively as the seventh highest cause of years lived with disability (YLDS).[2]

Headache during pregnancy needs special attention, given that the condition is most prevalent in women of child-bearing age. It is imperative to improve the diagnosis and treatment of headache during pregnancy and breastfeeding due to its considerable burden and the potential risks to the foetus of its pharmacological treatment.

The main concern with a pregnant woman suffering from this symptom is to distinguish a primary headache (when pain is the disease) from a secondary headache (when pain is a symptom of another disease). Three scenarios arepossible.[3,4]

- She suffers from a primary headache and now she presents with her usual headache;
- She does not suffer from a primary headache and she presents with her first severe headache during pregnancy;
- She suffers from a primary headache, but now pain is different in quality, intensity or associated symptoms.

In the second and third scenarios, headache must be considered as a symptom of an underlying disease until an appropriate diagnostic evaluation has been performed. Primary Headache in pregnant women is classified into four types:

- Migraine
- Tension-type headache
- Cluster headache
- Trigeminal Autonomic Cephalgias (TACs).

Migraine :

Migraine is by far the most frequent type, accounting for about 90 percent of primary headaches in pregnant women.[6] The lifetime prevalence of migraine disorder among pregnant women is approximately 30 percent.[7,8]

Other types of primary headache during pregnancy (i.e., tension headache, cluster headache, and other TACs) are rarer.[9]

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Primary headaches can be pre-existing (i.e., they began before pregnancy) or can occur for the first-time during pregnancy, postpartum, or breastfeeding. The stress of pregnancy and imminent infant care may exacerbate the frequency and/or severity of primary headaches. Migraine remains the most common type of both pre-existing and pregnancy-onset primary headache.

The natural history of migraine is greatly influenced by hormonal changes. In fact, prepubertal boys and girls show similar prevalence, with prevalence increasing in girls after menarche.[10] Pregnancy and breastfeeding are therefore believed to act as modulators, reducing the frequency of migraine or even preventing it. These changes are linked to changes in oestrogen and progesterone levels, which increase during pregnancy but remain stable in comparison to the fluctuations occurring outside of pregnancy. Migraine improves during pregnancy in most women, although this is not always true for chronic forms or migraine with aura.[11] Improvements are more marked in the second and third trimesters, with a recurrence rate of up to 90% after delivery.[12] Debut of migraine rarely occurs during pregnancy; when it does, it is most frequent during the first trimester.[10] Pregnancy is associated with high levels of stress, a classic trigger factor for migraine that should therefore be managed in these patients. It has also been suggested that breastfeeding plays a protective role as it stabilises the levels of oestrogen, prolactin, and oxytocin, which may have antinociceptive effects.[13]

Table 1 : Recommended drugs for the treatment of migraine during pregnancy.[14]

Conditions	**Treatment**
Treatment of mild-to-moderate migraine attacks	Oral paracetamol/oral NSAIDs in the second trimester (ibuprofen, naproxen, diclofenac) and/or **Antiemetics:** Metoclopramide Pyridoxine+doxylamine
Treatment of moderate-to-severe migraine attacks	Oral/IN/SC sumatriptan (other triptans) and/or Antiemetics: Metoclopramide (Ondansetron : 2nd option)
Treatment options for status migrainosus	a) Anaesthetic nerve block (lidocaine:1st option) b) IVNSAIDs (diclofenac 75mg IV) c) Sumatriptan 6mg SC d) Chlorpromazine 12.5-25mg IV e) Metoclopramide 10-20mg IV f) Methylprednisolone 60-120mg IV/dexamethasone 20-40mg IV

Preventive treatment of first choice	a) Non-pharmacological measures (regulars chedules, sufficient sleep, avoiding fasting, relaxation, etc) b) Propranolol or metoprolol : 1st choice c) Anaesthetic nerve block : 1st choice d) Lamotrigine :1st choice for very frequent auras e) Amitriptyline : 2nd choice
IN : intranasal; IV : intravenous; NSAID : non-steroidal anti-inflammatory drug; SC : subcutaneous.	

Preventive Treatment :

Use of preventive drugs is uncommon, due to the low prevalence of migraine during the second and third trimesters; only patients with frequent attacks require it. Special emphasis should be placed on non-pharmacological treatment by focusing on avoiding any potential migraine triggers. Patients receiving drugs should undergo ultrasound studies as and when needed depending on the drug regimen and, wherever possible, discontinue treatment several days or weeks before the estimated due date, due to the risks to the neonate.[14]

Nerve blocks considered to be a good treatment option and are being increasingly used. Lidocaine is preferred over other anaesthetic agents due to its good safety profile.[15] Botulinum toxin type A was classified as a category C drug according to the old FDA pregnancy risk category but data from over 300 women exposed to botulinum toxin type A during atleast the first trimester (the drug was only administered for migraine prevention in 22 cases) are included in the registries of several pharmaceutical companies; the rates of miscarriage and teratogenicity in this sample were similar to those recorded in the general population.[16] Therefore, patients with refractory migraine who showed good response to botulinum toxin type A before pregnancy may continue with this treatment.[17,18]

Table 2 : Drugs recommended for the treatment of other primary headaches during pregnancy and breastfeeding.[14]

Type	Symptomatic Treatment	Preventive Treatment
Tension-type headache	Paracetamol/NSAIDs (only in 2nd trimester)	Amitriptyline (rarely necessary)
Cluster headache	100% high-flow oxygen therapy Sumatriptan SC/IN Lidocaine IN46	Transitional treatment : Prednisone or methyl prednisolone at the lowest possible dose and for the shortest possible time Anaesthetic nerveblock — Preventive Treatment : Verapamil
Paroxysmal hemicrania/ hemicraniacontinua	Indomethacin : lowest possible dose, only in 2nd trimester	Not established
SUNCT	Lamotrigine	Not established
Headache triggered by Valsalva manoeuvres	NSAIDs/indomethacin: lowest possible dose, only in 2nd trimester	Not established
IN: intranasal; NSAID : non-steroidal anti-inflammatory drug; SC: subcutaneous; SUNCT: short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing.		

Secondary Headaches :

Pregnancy is a risk factor for a secondary headache disorder. Hypercoagulability, hormonal changes and anaesthesia for labour are just some of the multiple factors contributing to the high incidence of secondary headaches during pregnancy. A study by Robbins et al. Found 35% of secondary headaches among 140 pregnant women presenting with a cute headache : hypertensive disorders of pregnancy covered 51% of these cases (about 18% of total), with preeclampsia as the major cause, followed by reversible posterior leuko-encephalopathy syndrome (PRES, eclampsia), reversible cerebral vasoconstriction syndrome (RCVS) and acute arterial hypertension.

Table 3 : Main causes of secondary headache during pregnancy and breastfeeding.[14]

	Typical Characteristics	**Complimentary Tests**
Cerebral venous thrombosis	Headache exacerbated by Valsal vamanoeuvres and in the supine position	MRI and MRI angiography
Ischaemic stroke	The most frequent causes are hypercoagulability associated with pregnancy and the postpartum period, and artery dissection	MRI and MRI angiography
Preeclampsia and eclampsia/posterior reversible encephalopathy syndrome	Headache accompanied by a typical visualaura	Blood pressure monitoring Urine sediment test (proteinuria) MRI and MRI angiography
Reversible cerebral vasoconstriction syndrome		Blood pressure monitoring MRI and MRI angiography
Idiopathic intracranial hypertension	Headache exacerbated with Valsalva manoeuvres, papilloedema, hemianopsia, and/or diplopia	Eye fundus examination Visual field test MRI and MRI angiography
Postdural puncture headache	Orthostatic headache, may present with diplopia and instability; appears several hours to days after lumbar puncture Less frequently, pneumocephalus following epidural anaesthesia may present with sudden headache immediately after the procedure	No complementary testing is normally needed
Subarachnoid haemorrhage	Thunderclap headache	MRI and MRI angiography MRI and MRI angiography Arteriography

	Typical Characteristics	Complimentary Tests
Brain tumour	Headache progressing over the course of several days or months; pain intensifies with Valsalva manoeuvres and/or presents with focal neurological signs.	MRI
Pituitary apoplexy	Thunderclap headache accompanied by visual alterations and altered level of consciousness	MRI and MRI angiography
Meningitis/meningoencephalitis	Headache and fever, particularly incases of HIV infection or immunosuppression	MRI and MRI angiography Lumbar puncture

Evaluation of Headache and Diagnosis :

It is predominantly based on the history of the episode of headache, detailed description of the episode and accompanying symptoms, possible associated diseases that could trigger or worsen the course of headache. A thorough examination followed by complementary tests like neuroimaging, lumbar puncture and other methods to pinpoint the actual cause.

Conclusion :

Primary headache, and particularly migraine, is the most frequent and prevalent type of headache during pregnancy. Migraine generally improves in this period due to hormonal factors, although the relief is not as marked in patients with migraine with aura. Little evidence is available on the characteristics or progression of other types of primary headache in pregnant women due to their low prevalence. It is essential to rule out secondary headache in these patients, as this type of headache may be associated with such conditions as preeclampsia or venous sinus thrombosis secondary to hypercoagulability. Complementary tests can currently be performed with few restrictions, although MRI is preferred over techniques that use ionising radiation. As a general rule, pharmacological treatment should be administered at the lowest possible dose and for the shortest possible time, and the patient should be informed of the associated risks and benefits. Breastfeeding offers greater flexibility for pharmacological treatment, although medications should be administered several hours before breastfeeding.

References :

1. Manzoni GC, Stovner LJ. Epidemiology of headache [Internet]. Handbook of clinical neurology, Vol.97, 1st ed. Amsterdam: Elsevier; 2010. p. 3-22, 10.1016/S0072-9752(10)97001-2.
2. (GBD 2015 Disease and Injury Incidence and Prevalence Collaborators (2016) Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the global burden of disease study 2015. Lancet 8; 388(10053):1545–1602).
3. Menon R, Bushnell CD (2008) Headache and

pregnancy. Neurologist 14(2):108–119.

4. Dixit A, Bhardwaj M, Sharma B (2012) Headache in pregnancy : a nuisance or a new sense? Obstet Gynecol Int 2012:697697.
5. Headache Classification Committee of the International Headache Society (IHS), The International Classification of Headache Disorders, 3rd edition. Cephalalgia : an international journal of headache. 2018 Jan; 38(1):1-211.doi:10.1177/0333102417738202. PMID:29368949.
6. Robbins MS, Farmakidis C, Dayal AK, et al. Acute headache diagnosis in pregnant women: a hospital-based study. Neurology. 2015 Sep 22;85(12):1024 30.doi:10.1212/wnl.0000000000001954.PMID:26291282.
7. Frederick IO, Qiu C, Enquobahrie DA, et al. Lifetime prevalence and correlates of migraine among women in a pacific northwest pregnancy cohort study. Headache. 2014 Apr; 54(4):675-85. doi:10.1111/head.12206. PMID:23992560.
8. Gelaye B, Do N, Avila S, et al. Childhood Abuse, Intimate Partner Violence and Risk of Migraine Among Pregnant Women : An Epidemiologic Study. Headache. 2016 Jun; 56(6):976-86.doi:10.1111/head.12855. PMID:27242154.
9. Negro A, Delaruelle Z, Ivanova TA, et al. Headache and pregnancy: a systematic review. The journal of headache and pain. 2017 Oct 19; 18(1):106.doi:10.1186/s10194-017-0816-0.PMID: 29052046.
10. Nappi RE, Albani F, Sances G, Terreno E, Brambilla E, Polatti F. Headaches during pregnancy. Curr Pain Headache Rep [Internet]. 2011; 15(4):289—94.
11. Brandes JL. Headache related to pregnancy: management of migraine and migraine headache inpregnancy. Curr Treat Options Neurol. 2008;10:12—9.
12. Robbins MS. Headache in pregnancy. Contin Lifelong Learn Neurol [Internet]. 2018; 24:1092—107.
13. Calhoun AH. Migraine treatment in pregnancy and lactation. Curr Pain Headache Rep.2017;21:1—5.
14. González-García N, Díazde Terán J, López-Veloso AC, Mas-Sala N, Mínguez-Olaondo A, Ruiz-Pinero ~ M, et al. Cefalea: embarazo y lactancia. Recommendations del Grupo de Estudio de Cefaleas de la Sociedad Espanola ~de Neurología (GECSEN). Neurología. 2022; 37:1—12.
15. Blumenfeld A, Ashkenazi A, Grosberg B, Napchan U, Narouze S, Nett B, et al. Patterns of use of peripheral nerve blocks and trigger point injections among headache practitioners in the USA: results of the American Headache Society Interventional Procedure Survey (AHS-IPS). Headache J Head Face Pain [Internet].2010; 50:937—42.
16. Brin MF, Kirby RS, Slavotinek A, Miller-Messana MA, Parker L, Yush manova I, et al. Pregnancy outcomes following exposure to onabotulinumtoxin A. Pharmacoepidemiol Drug Saf [Internet]. 2016;25:179—87.
17. Morgan JC. Botulinum toxin A during pregnancy: a survey of treating physicians. J Neurol Neurosurg Psychiatry [Internet]. 2006;77:117—9.
18. Robinson AY, Grogan PM. OnabotulinumtoxinA successfully used as migraine prophylaxis during pregnancy : a case report. Mil Med [Internet]. 2014;179:e703—704.

Case Report

The Blue Girl with 'Saturation Gap'

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Abstract :

Methemoglobinemia is a rare but life threatening condition and a high index of suspicion should be maintained to be able to diagnose it especially in the presence of Saturation Gap. Here we present a case of Methemoglobinemia without any apparent cause initially but later found to be exposed to Dapsone after thorough history taking, emphasizing the need of a detailed history in clinical medicine.

Keywords :

Methemoglobinemia, Saturation Gap, Methylene Blue

Introduction :

Methemoglobinemia presents with cyanosis along with no detectable abnormality in pulmonary as well as cardiac circulations and it is characteristically resistant to supplemental oxygen therapy. It is a congenital as well as an acquired cause of hemoglobinopathy that mainly precipitates in the presence of oxidizing agents like Dapsone and Lignocaine. Haemoglobin can be detected easily by spectrophotometer. It can be found in the blood in a variety of forms, including oxyhemoglobin, carboxyhemoglobin, methemoglobin and other minorcomponents. The heme group contains ferrous (Fe2+) iron linked to the N of the histidine.[1] Oxygen binds reversibly to this ferrous iron in the heme group and produces a sigmoid shaped Oxygen Dissociation Curve under physiological conditions. This Ferrous Iron can bind to other compounds as well like CO and N2O. But if the Ferrous or reduced iron of Haemoglobin somehow gets oxidised to the ferric state then a compound is formed known as Methemoglobin (HbFe3+) resulting in a left shift in the oxygen saturation curve and a functional anaemia.

This reaction can occur as the result of exposure to superoxide anions:

$$HbFe2++O2 \rightarrow HbFe3+O2- \rightarrow HbFe3+ \{Methemoglobin\} + O2$$

About 0.5-3 % Methemoglobin is formed daily under physiological conditions and in normal individuals there is a balance between the spontaneous process of methemoglobin formation and a series of protective mechanisms that reconvert the methemoglobin back to haemoglobin by theenzyme, cytochrome b5 methemoglobin reductase. But this physiological process of reconversion can fail if the red cell is exposed to certain oxidant drugs or toxins or if the intrinsic protective mechanisms of the cell are defective, or if genetic abnormalities of the Haemoglobin molecule affect globin or heme stability.

Clinical Features can include the following and it is dependent on the amount of MetHb present in the blood: [2]

1. **For MetHb Levels around 10-15% :**

→ Skin and mucous membranes have cyanosis, sometimes called pseudocyanosis; not associated with clubbing.

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→ Skin and mucosal surfaces are brownish/slate-colored

2. For MetHb Levels around 30% to 45% :

→ Headache, fatigue, tachycardia, weakness, dizziness

3. For MetHb levels above 60% :

→ Cardiac arrhythmia, dyspnea, seizures, and coma

4. For MetHb Levels greater than 70% :

→ Death

Investigations will reveal a saturation gap.[3]

It is defined as the difference in SO_2 measurements between a standard Blood Gas machine and a pulse oximetry being more than 5%. It happens due to carboxyhemoglobin, methemoglobin, or sulf hemoglobin. Pulse oximetry works on the principle of detection of infrared (940nm) and red lights (660nm) according to Beer-Lambert's Law, which provide the difference between oxygenated and deoxygenated haemoglobin having different light absorptionrates. Then they are calculated according to previously calibrated curves, but this assumption holds good if only two forms of Haemoglobin are taken into account-oxyhemoglobin and the deoxyhemoglobin. In case of Gas analysis depending on the analyser used, arterial oxygen saturation ($sO_2(a)$) is calculated from measured $pO_2(a)$ or measured directly by CO-oximetry. $sO_2(a)$ which is calculated from po2(a) is done using a normal Oxygen-Dissociation Curve and assume no abnormal increase in the dyshaemoglobins, COHb and MetHb. Because of this assumption and calculation of $sO_2(a)$ using complex algorithms; there is a "Saturation Gap". But in a Co-Oximeter this measurement is based on spectrophotometric analysis of the haemoglobin released from a sample of haemolysed arterial blood. The four haemoglobin species present in blood (oxyhemoglobin, deoxyhemoglobin, carboxyhemoglobin and methemoglobin) each have a characteristic light-absorption spectrum. And hence this limitation can be dealt with.

Case :

Patient description : A 15 years old female from 24 Parganas presented to the ER with Shortness of Breath along with restlessness. There was a past history of Inhaler use in the childhood after which she didn't require any such. Medication History was unrevealing initially. Examination revealed her cyanosed Mucous Membranes. Her vitals were stable except for tachycardia of 120 bpm and SpO2: 85% fixed with 6Lpm O2 delivered via Face Mask. ABG showed : ph-7.48; pao2-191; pCO2-25.9; spO2- 98%; HCO3-18.6. She remained restless and cyanosed despite Oxygen therapy with a SpO2 of 85 % (by finger oximetry). Her Blood Biochemistry reports came normal except for Hemoglobin-9.4%. Echocardiography did not reveal any Congenital Heart Disease. With no improvement in saturation by peripheral oximetry and with a persistent Saturation Gap and an HPLC of Haemoglobin which returned with a result of HbE thalassemia trait, a provisional Diagnosis of CO Poisoning or Sulph-methemoglobinemia was made. Detailed history revealed that the girl had been on tablets of dapsone and minocycline prescribed by her dermatologist for her acne form eruptions on the skin. With a working diagnosis of dapsone induced methemoglobinemia, she was managed with intravenous methylene blue 4 ml 8 hourly along with other resuscitative measures. Her MetHb levels reduced to 5% in the next few days along with improvement in Pulse oximetry.

Discussion :

Cyanosis is defined as a bluish discoloration of the skin and mucous membranes as a result of excessive levels of deoxy-haemoglobin. But in case of methemoglobinemia it is not deoxygenation but overt oxidation of the Ferrous Iron which is causing cyanosis thus otherwise known as pseudocyanosis. After ruling out causes of true cyanosis, Sulph Hemoglobinemia and CO Poisoning and in the presence of a Saturation Gap, if there is increased methemoglobinemia then,

The evaluation can be divided into either :

1. Drug/Toxin induced Methemoglobinemiaeg: Dapsone, Primaquine
2. Hereditary Causes of Methemoglobinemiaeg: cytochrome b5 reductase mutation
3. Failure of intrinsic protective mechanisms of the RBC to reconvert Methemoglobineg: New borns, Septic Shock, Falciparum Malaria
4. Defects in Globin and/or Heme Stabilityeg: Haemoglobin M diease

Close D/D is Drug Induced Hyperpigmentation or Bluish Discoloration of the skin due to poisons and heavy metals specifically Silver.

Treatment of methemoglobinemia includes removal of the inciting agent and consideration of treatment with methylene blue which acts via NADPH-MetHb reductase, generating Leukomethylene blue which acts as an electron donor to reduce methemoglobin to hemoglobin. Treatment decision should be made on clinical presentation and not withheld for laboratory values. The methylene blue dose is 1-2 mg/kg (0.1-0.2 mL/kg of 1% solution) intravenously over 5 minutes and can be repeated.[4]

Saturation Gap though is a limitation of the blood gas analysers in our resource poor country, still can provide a very good pointer towards such diseases and help us in diagnosing them provided a high index of clinical suspicion is required.

References:

1. Marengo-Rowe AJ. Structure-function relations of human hemoglobins. Proc (BaylUniv Med Cent). 2006 Jul;19(3):239-45. doi: 10.1080/08998280. 2006.11928171. PMID: 17252042; PMCID: PMC1484532.
2. Ludlow JT, Wilkerson RG, Nappe TM. Methemoglobinemia. 2022 Aug 29. In: Stat Pearls [Internet]. Treasure Island (FL) : Stat Pearls Publishing; 2022 Jan–. PMID: 30726002.
3. Akhtar J, Johnston BD, Krenzelok EP. Mind the gap. J Emerg Med. 2007 Aug; 33(2):131-2. doi: 10.1016/j. jemermed. 2006.11.016. Epub 2007 Jun 5. PMID: 17692762.
4. Skold A, Cosco DL, Klein R. Methemoglobinemia: pathogenesis, diagnosis, and management. South Med J. 2011 Nov;104(11):757-61.

Case Report

Diabetic Mastopathy : Mimicking Breast Carcinoma

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Abstract :

Diabetic mastopathy is a rare benign breast disease characterised by periductal and perilobular lymphocytic aggregation with stromal fibrosis. This type of lesion usually presents as unilateral or bilateral palpable breast mass in a patient with type 1 diabetes mellitus or autoimmune diseases but may also present in non diabetic patient and type 2 diabetes. We report a case of a diabetic mastopathy who presented clinically as an indeterminate breast lump. Ultrasonography, FNAC, trucut biopsy could not exclude the suspicion of malignancy so a simple mastectomy was done showing the typical features of Diabetic Mastopathy.

Introduction :

Diabetic mastopathy is a collection of clinical, radiological and histological features found in dense fibrous masses of the breast first described by Soler and Khardori[1] in 1984. The disease is associated with insulin dependent type 1 diabetes mellitus and some autoimmune disease but also seen in type 2 diabetes mellitus and some non diabetic patient[2,3]. Patients usually present with unilateral or bilateral palpable, hard, painless, irregular masses. Clinical, imaging and cytology findings are inconclusive and often misdiagnosed as breast carcinoma.

Case Report :

The patient described is a 62 year old Indian female, presented with a lump in her left breast of 4 months duration. There was no associated pain but she noticed an increasing size gradually. She has been treated for type 2 diabetes mellitus for last 16 years. She is also a patient of chronic kidney disease and on hemodialysis thrice a week and associated with hypertension for last 14 years.

Physical examination revealed unilateral, hard, irregular, painless mass in the upper quadrant of the left breast. There was no nipple discharge or nipple retraction, skin abnormality or axillary lymphadenopathy.

The left breast ultrasonography examination showed a hyperechoic mass measuring 4cmx3cmx1.2cm and was reported as BIRADS 3 lesion.

FNAC was done outside of this institution. Microscopical examination showed the features of suspicious of Ductal Carcinoma of Breast (C5 Lesion). Slides were reviewed in our department and it was reported as Atypical Ductal Hyperplasia of breast (ADH) (C4 Lesion). Cytological report was downgraded due to poor cellularity of the smear.

Thereafter a Trucut biopsy was performed. Histologic evaluation revealed a dense fibrous stroma associated with some periductal and perilobular lymphocytic infiltration (fig. 1&2)

The mass was increasing in size and also there was a discrepancy between the cytology and histology reports so, a Simple Mastectomy was done.

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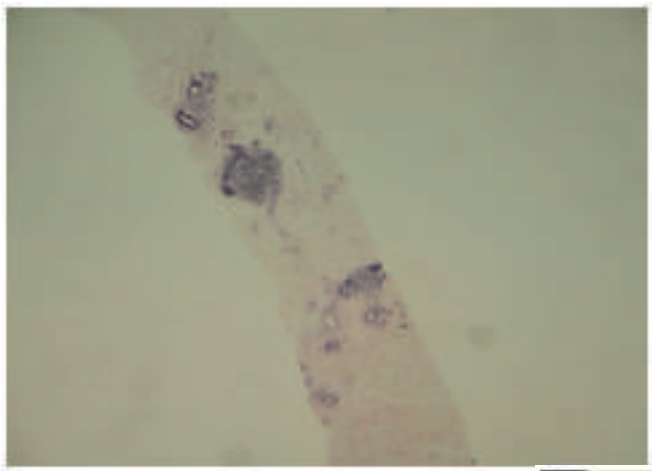
Gross pathology of the excised specimen demonstrated anterior aspect of left breast (fig 3) showed an unremarkable skin, no ulceration was present, nipple areola retraction was not there. After loafing a whitish, irregular, firm, partly circumscribed fibrotic mass was seen measuring 9cmx5.2cmx2.5cm (fig.4,5).

Histologically, the lesion showed dense stroma with duct and lobules (fig.6), lymphocytes aggregation around ducts, lobules and vessels, keloid like dense stroma (fig.7,8,9,10) and some enlarged, scattered stromal Myofibroblasts (fig.11). Foci of dilatation of ducts (fig.8,9) and Apocrine changes are present (fig.10).

Some differential diagnosis could be Fibromatosis, non neoplastic fibrous lesion of Breast, Low grade metaplastic carcinoma. To confirm the diagnosis some Immuno-histochemical (IHC) Markers were applied.

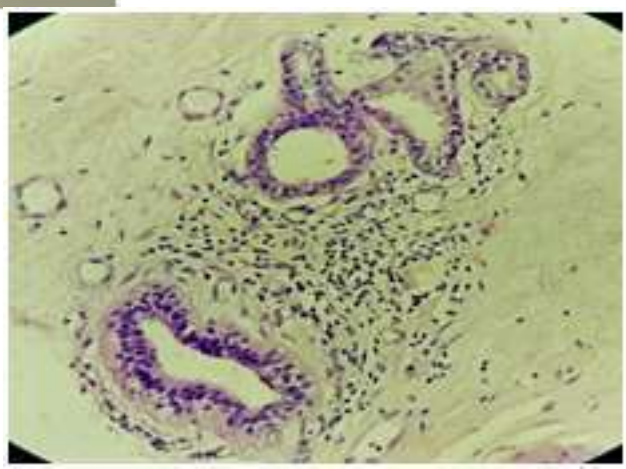
Pan cytokeratin was negative (fig.12). P63 was negative (fig.13), ruling out fibromatosis type of metaplastic carcinoma. Beta-catenin was negative in the lesion (fig.14), making fibromatosis less likely.

This case met all the histologic parameters fitting the diagnosis of Diabetic Mastopathy (DMP). The patient currently remains well and is on follow-up.



← Fig.1 H&E, 40X

Fig.2 H&E, 100X →



← Fig. 3

Fig. 4 →

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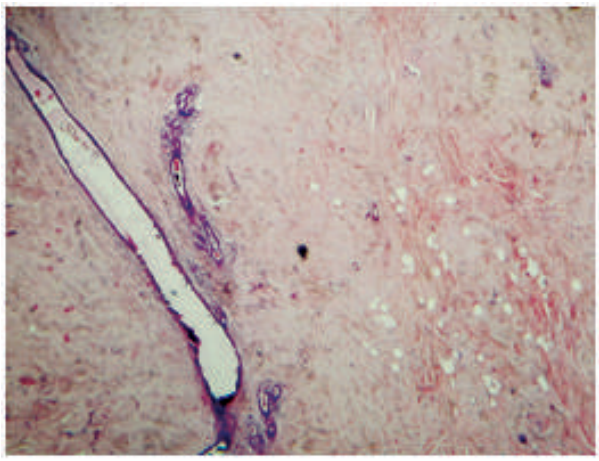
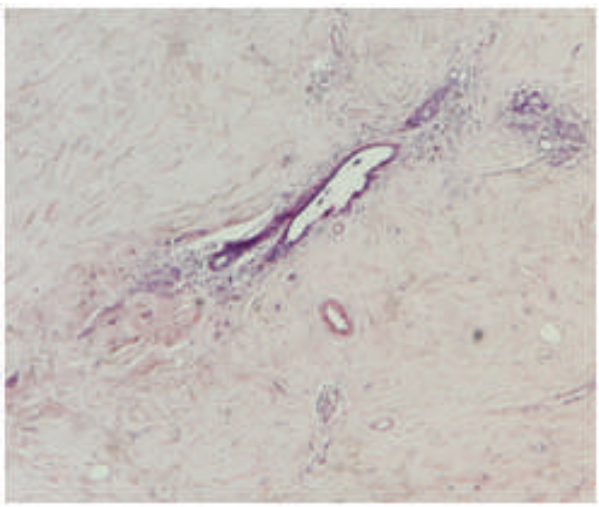
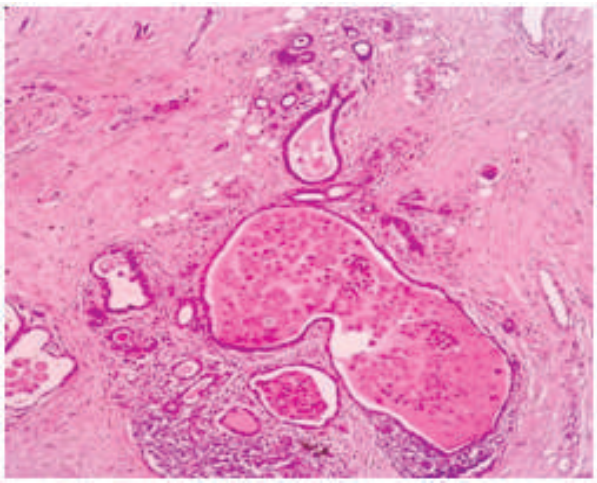


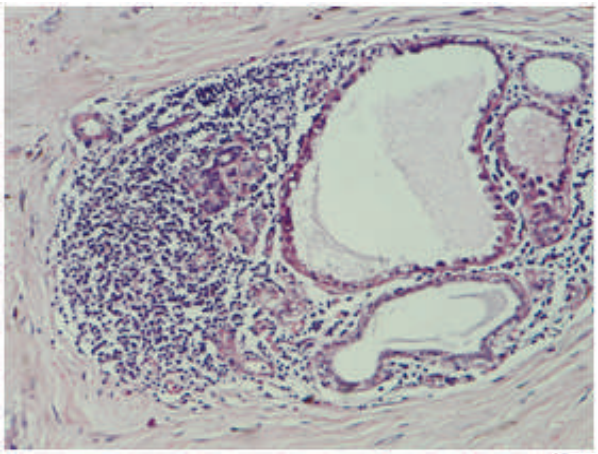
← Fig. 6, H&E, 40X

Fig. 7, H&E, 100X →



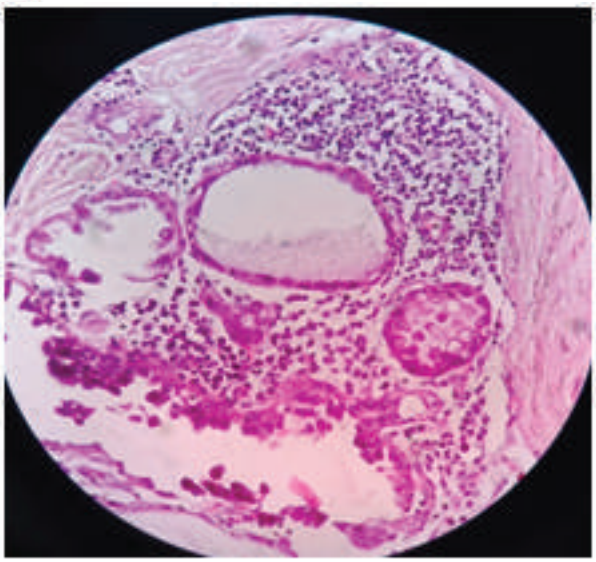


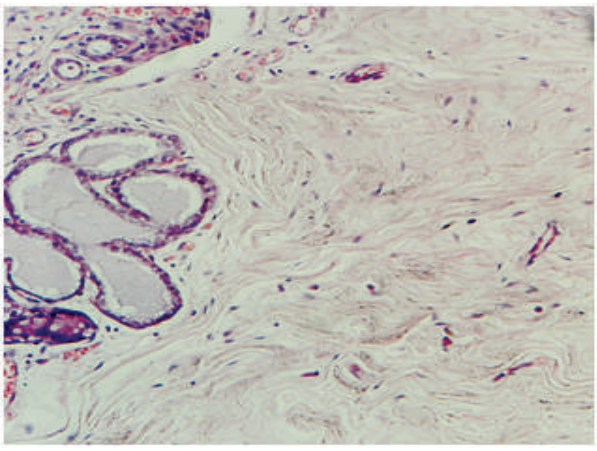
← Fig. 8, H&E, 100X



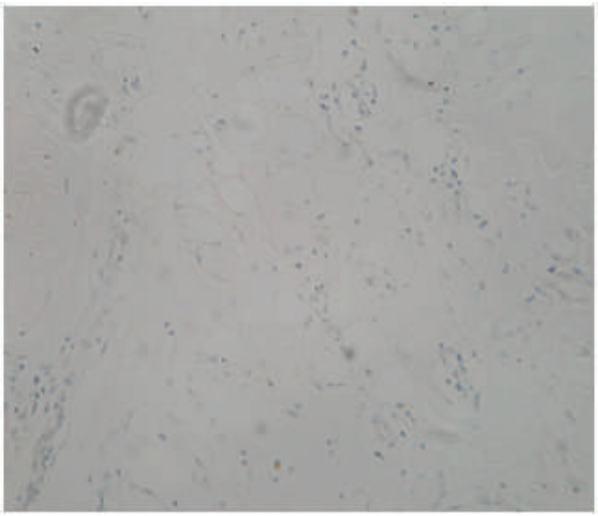
← Fig. 9, H&E, 200X

Fig. 10, H&E, 400X →



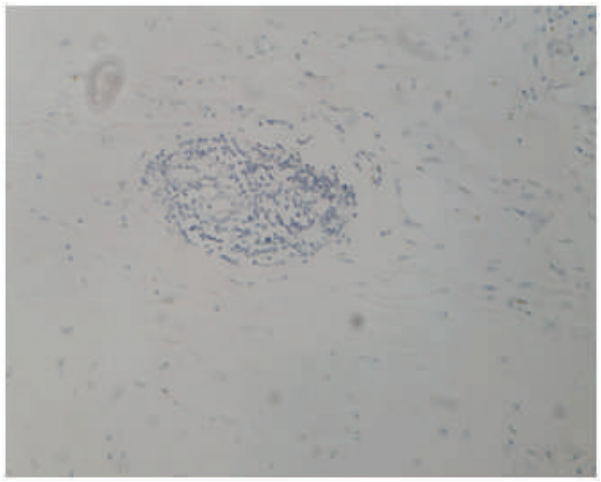


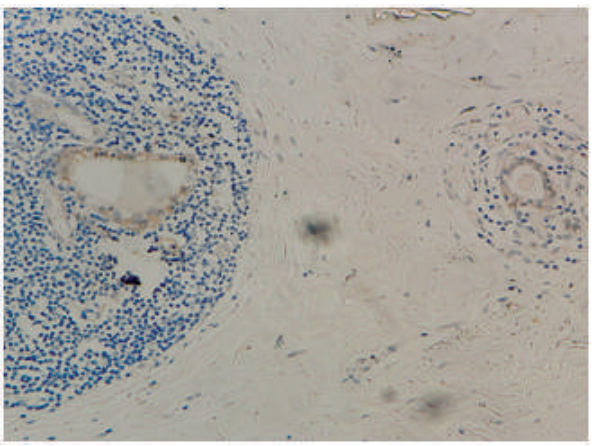
← Fig. 11, H&E, 200X



← Fig. 12, PAN-CK Negative

Fig. 13, P63 Negative, 200X →





← Fig. 14, Beta-catenin negative, 200X

Discussion :

Diabetic Mastopathy (DMP) is a rare entity of self limiting fibroinflammatory disease of the breast associated with type 1 diabetes mellitus. The prevalence has been found to be less than 1% of benign breast diseases, but can range from 0.6% to 13% in type 1 diabetic women[1]. Most patients with DMP have an complication arising from diabetes such as retinopathy, neuropathy, nephropathy[1,4].

Clinical findings include hard, irregular, easily movable, painless breast masses. It can be solitary or multiple, unilateral or bilateral. These characteristics raised the suspicion of carcinoma[1,5,6].

Tomaszewski et al.[3] found that certain microscopic features like epitheloid cells in the fibrous stroma were specific for Insulin dependent diabetes mellitus (IDDM).

Seidman et al.[7] proposed a combination of histologic features to confirm diabetic mastopathy. These were a collagenous stroma with keloid like features with a slightly increased concentration of stromal spindle cells and mature lymphocytes clustered circumferentially around small blood vessels as well as in and around lobules and ducts.

Even though many reports have been published on DMP in radiology, pathology and surgical literature, this clinical condition is poorly recognized since breast examination is not routinely performed in young diabetic patients.

The pathogenesis of DMP is not completely understood, but many theories have been proposed considering a multifactorial etiology.

Sternberg et al.[8] found that the glycosylation and increased intermolecular cross linkages in diabetics render collagen resistant to degradation. This leads to accumulation of connective tissue disorders in diabetics, including mastopathy.

Lymphocytic mastitis in DMP is usually associated with B cell lymphocytes.

Some researchers who studied the prognosis of DMP found that these lesions are prone to single or multiple recurrence in the same or contralateral breast[9]. Long standing IDDM in young women hence warrants a routine clinical examination of the breast.

FNAC can be used to monitor patients with recurrent lesions in a proven case of DMP, as it can show ductal epithelial cells in clusters, lymphocytes and epitheloid fibroblasts which are readily identified in connective tissue fragments[9].

Conclusion :

Recognizing DMP requires an awareness of the existence of this entity and a careful correlation of the patient's clinical history with the physical, radiological, and pathological examinations. As the disease can be managed conservatively but may recur, an accurate diagnosis is essential to avoid unwanted multiple surgical biopsies. Monitoring of the patients by FNAC would be sufficient once the pathologic diagnosis is confirmed.

References :

1. Soler NG, Khardori R. Fibrous disease of the breast, thyroiditis, and cheiroarthropathy in type 1 diabetes mellitus. Lancet 1984;1:193-5.
2. Neetu G, Pathmanathan R, Weng NK. Diabetic mastopathy: a case report and literature review. Case Rep Oncol 2010;3:245-51.
3. Tomaszewski JE, Brooks JS, Hicks D, Livolsi VA. Diabetic mastopathy : a distinctive clinicopathologic entity . Hum Pathol 1992;23:780-6.
4. Mak CW, et al. Case report-diabetic mastopathy. Br J Radiol 2003;76:192-4.
5. Camuto P, Zetrenne E, Ponn T. Diabetic mastopathy: a report of 5 cases and a review of the literature. Arch Surg2000;135:1190-3.
6. Keyoung JA, et al. Diabetic mastopathy. Applied Radiology 2003;32(9):47-9.
7. Seidman JD, Schnaper LA, Phillips LE. Mastopathy in insulin requiring diabetes mellitus. Hum Pathol.1994; 25:819-824.
8. Sternberg M, Cohen-Fortere L, Peyroux J. Connective tissue in diabetes mellitus. Diabetes Metab. 1985;11: 27-50.
9. Bayer U, Horn LC, Schultz HG. Bilateral, tumor like diabetic mastopathy : progression and regression of the disease during 5 year follow-up. Eur J Radiol.1998; 26:248-253.

Abstracts from The XXXIV Annual Scientific Conference, Ramakrishna Mission Seva Pratishthan, Vivekananda Institute of Medical Sciences, 26th & 27th November, 2022

Music Therapy as An Adjunct to Post-operative Care in General Surgical Patients

Swarup Santra

Introduction : Flawless Post-operative recovery is like a dream for surgeons and when it doesn't happen, it gives quite a bit of discomfort. Even with the advancement of modern medicines, it is yet to be achieved. So, researchers are in search of newer modalities, especially non pharmacological ones, amongst which music therapy is the most emerging one.

Aim : To explore the effect of music therapy as an adjunct to conventional post-operative care.

Materials and Method : Control and Case (study) group, chosen alternatively (randomized) among the patients of Inguinal Hernia undergoing open surgery with a match pairing of age (40-50 yrs., 50-60 yrs., 60-70 yrs.), in RKMSP, VIMS, Kolkata (who doesn't falls in the exclusion criteria), to rule out different subjective bias.

Study Design : Randomized Control Trial

Type of Study : Prospective Observational

Scales used for comparison : NRS & VAS Scales for pain assessment and GAD7 for Anxiety level.

Result : Patients who listened music (n=42) (study group) has less Post operative Pain than control group who has received conventional post operative care only (p=<0.0001); Anxiety level of patient is lower in study group compared to control group (though it's not found statistically significant in this smaller scale), resulting in better wound healing and less hospital stay.

Conclusion : Music therapy, as an adjunct to conventional treatment in post-operative patients, in comparison with the group of patients receiving conventional post-operative care only, has a positive impact in post-operative pain management & also hastens post-operative wound healing; though a larger scale study is required to explore the other aspects of music therapy.

Keywords : Inguinal hernia, post-operative pain and Music therapy.

Correlation of Preoperative HRCT Scan of Temporal Bone with The Operative Findings in Mucosal Type of Chronic Otitis Media

Moumita Sen

Introduction : Chronic Otitis Media (COM) is a chronic inflammation of middle ear cleft. The advent of high resolution computed tomography (HRCT) scanning, has allowed superb pre-operative imaging of anatomy, some evidence of the extent of the disease and a screen for asymptomatic complications.

AIM : 1. To study the radiological findings of the temporal bone in patients with mucosal COM.

2. To compare preoperative computerised tomographic findings with intra-operative pathology.

Materials and Methods : This is a retrospective study done in the Department of Otorhinolaryngology in Vivekananda Institute of Medical Sciences, Kolkata in patients with COM with discharging ear not responsive to medications. A total of 75 patients over a period of 5 years (Jan'17 to Dec'21) were included. All patients underwent canal wall up mastoidectomy with tympanoplasty. The status of the external auditory canal (EAC), type of perforation, middle ear mucosa, posterior ventilation pathway, scutum, epitympanum, ossicular chain, tegmen tympani, Fallopian canal, mastoid pneumatisation, and jugular bulb were compared intra-operatively and with the preoperative HRCT scan.

Statistical Analysis : Chi square test was used to analyze the significance of the difference between frequency distribution of the data.

Result : The CT scan findings of all patients with mucosal COM were compared with their operative findings. CT could predict the location of soft tissue in middle ear and mastoid in majority of the cases and therefore was found to be contributory to the decision making of exploration of mastoid in a clinically diagnosed mucosal disease. HRCT was found to be sensitive in the range of 91.3% – 100% and specific in range 94.7% – 100%. These comparisons were found to be highly significant with $P<0.001$.

Conclusion : We all tend to do HRCT of the temporal bone for difficult cases which do not respond to medical treatment. In this study we tried to add imaging as a routine investigation which will help us to decide a better surgical planning thereby reducing the failure.

Senior Resident, Dept. of ENT Head Neck Surgery, RKMSP, VIMS

The Effectiveness of Tapentadol in Perioperative Analgesia : A Prospective Comparative Study of Nasal Versus IV Paracetamol

Deepshikha Chakraborty

Background : Tapentadol is a relatively new analgesic. We decided to compare nasal versus iv paracetamol for their various effects in the perioperative period.

Materials and Methods : Sixty adults undergoing surgeries done under general anaesthesia of less than or equal to 120 minutes duration were divided into 2 groups of 30 each by computerized random allotment (Group –N: Nasal Tapentadol, Group –P : iv paracetamol). Group N received two puffs of nasal Tapentadol (Nearly 22.5mg per puff). The first dose was given 5 minutes before induction of anaesthesia. Group P received iv paracetamol 20 mg per kg body weight 5 minutes before induction of anaesthesia. Study area : RKMSP, VIMS, 99 Sarat Bose Road.

Study Design : This is a prospective comparative study. Statistical analysis was done by : Proportion tests, Correlation, ANOVA, Kruskal Walis test, Regression analysis, Paired t-test, Chi-square test, F test, and any other analysis found suitable, P-value for analytical purposes: 0.05 [95% Confidence Interval], Software for

Statistical Analysis : MS-Excel/ STATA 14 were used for statistics.

Study Period : July 2021 to January 2022 (6 months).

Results : Nasal Tapentadol group patients had significantly better analgesia 3 h postoperatively than iv paracetamol group.

Conclusions : Tapentadol, due to its norepinephrine reuptake inhibition properties, in addition to mu agonist, is a better analgesic and nasal preparations has more analgesic efficacy as compared to iv paracetamol.

Key words : Analgesia; nasal Tapentadol; iv paracetamol

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Comparative Study of Voice Outcome in Post-operative Cases of Vocal Fold Polyps

Biswajit Saha

Presenting Author : Dr. Biswajit Saha

Co-Authors : Dr. Amitabha Roychoudhury, Dr. Ushirin Bose.

Background : Voice is part of our identity, change in voice has great psychological impact.

Objective : Assessment of pre-op and post-op voice quality outcomes using GRBAS and VHI-10 scale and comparative study of voice improvement between post Microlaryngoscopic surgery (microflap techniques) patients & post Conventional polypectomy patients.

Methods : Place – RKMSP, **Study design** – Retrospective chart review, **Total sample size** - 40; **Statistical software** - SPSS version 22 used for analysis.

Case : 20 patients after Microlaryngoscopic Surgery (Microflap technique); **Control** - 20 patients after Conventional polypectomy.

Inclusion Criteria : 1. Patient aged more than 18 yrs who underwent microlaryngeal surgery & Simple polypectomy at our institution.

Exclusion Criteria :

1. Final HPE came as malignancy/pre malignancy.

2. Congenital lesions.

3. Past history of Thyroplasty, or any other laryngeal frame work surgery.

4. Laser and coblator assisted surgery.

Result : The study conducted over 40 patients with vocal fold polyps. Twenty patients (Male: Female-60:40) of control group underwent Conventional polypectomy. The mean & standard deviation of voice improvement score among control group using VHI-10 scale are 14.95 & 6.039 respectively. The mean & standard deviation of voice improvement score among control group using GRBAS scale are 4.25 & 1.019 respectively. Twenty patients (Male : Female - 75:25) of Case group underwent Microlaryngoscopic Surgery by microflap technique. The mean & standard deviation of voice improvement score among case group using VHI-10 scale are 16.05 & 7.577 respectively. The mean & standard deviation of voice improvement score among case group using GRBAS scale are respectively 5.5 & 1.877. So the voice improvement calculated by both scales is statistically greater in patients after Microlaryngoscopic Surgery than those patients underwent Conventional polypectomy.

Conclusion : Microlaryngoscopic surgery by microflap techniques results in statistically significant superior improvement in voice outcome compared to Conventional polypectomy.

Key Words : MLS - Microlaryngoscopic surgery; GRBAS-Grade of hoarseness, Roughness, Breathiness, Asthenia, Strain; VHI-Voice Handicap Index.

Junior Resident, Dept. of ENT, RKMSP, VIMS

Voice Practice in Covid -19 Era

Saurabh Gupta

Aims & Objectives : 1. To highlight the effect of the COVID-19 pandemic on voice practice intertiary care hospitals in India.

2. To look into accessibility and delay in treatment due to pandemic through questionnaire-based survey.

Material & Methods : We examined patients attending voice clinic of 2 tertiary care hospitals between April, 2020, and March, 2021, during the COVID-19 pandemic in India. We also focussed on patients for the same period in 2019 prior to pandemic, to compare the difference. The patients with benign vocal fold disorders, were asked following points using questionnaire based telephonic interview-

1. The time from onset of symptoms to initial consultation.
2. Delay in diagnostic laryngoscopy & stroboscopy.
3. Difference in cost of treatment.
4. Virtual voice therapy.

Results : 118 patients were seen in voice clinic in 2019 while only 47 patients were assessed in Covid era. 47% of patients did not have access to transport services to avail clinic facilities while 77% patients were afraid of contracting Covid-19. Thus, voice services used during the pandemic showed a decline beginning from April 2020 for number of consultations, procedures and voice therapy sessions.

Virtual voice therapy was initiated for follow-up patients; patients with benign vocal fold disorders except MTD were very satisfied with virtual voice therapy.

Discussion : Patients could not access voice services because of sudden unprecedented lockdown. The number of patients seeking voice services went down drastically as 77% patients citing fear of getting infected visiting a clinical establishment as the primary reason. Voice therapy services though affected could be continued via virtual platform.

Conclusions : The impact of COVID-19 on voice practice in India has been distinct and profound. Newer techniques have evolved in terms of imparting voice therapy on digital platform and both patients and clinicians have adapted to the new normal very efficiently.

Key Words : Voice therapy, voice clinic, COVID-19, pandemic, questionnaire.

Dept. of ENT, RKMSP, VIMS

A Study to Assess The Attitude And Find The Effect of An Awareness Programme on Knowledge Regarding Non-Scalpel Vasectomy (NSV) Among Male Partners in A Selected Community of West Bengal

Puja Pati

Abstract : Non-scalpel vasectomy (NSV) is a highly effective modern method of family planning for man, involving a small puncture, without incision or stitches. A study was conducted to assess the attitude and find the effect of an awareness programme on knowledge regarding Non-Scalpel Vasectomy among male partners in a selected community of West Bengal. The objectives of the study were to assess attitude of male partners (Age 25-45 years) regarding non scalpel vasectomy and find the effect of an awareness programme in order to improve knowledge among male partners who had negative attitude regarding NSV and to identify the association between pre-test knowledge level and selected variables. The study was conducted in Durmuth II, 1 no Dabendra G.P, Contai III Block. The tools used were, tool I demographic proforma, tool II structured attitude scale on NSV, tool III structured knowledge questionnaire on NSV. The phase I descriptive study was conducted among 200 male partners selected by convenience sampling technique to assess the attitude by using tool I and tool II and study result showed that majority 79% male partners had negative attitude regarding NSV. The phase II pre experimental study was conducted among 30 male partners who were top negative attitude scorer regarding NSV to find the effect of an awareness programme on knowledge by using tool III. The study result showed awareness programme on knowledge was effective as the mean post-test knowledge score (15.2) was higher than the mean pre-test knowledge score (6.1). The paired 't' test result showed that the post-test knowledge score was significantly higher than the pre-test mean knowledge score ($*'t'_{(29)}$-2.04 $P<0.05$) at 0.05 level of significance. The chi-square test results indicated that there was no significant association between pre-test knowledge levels of the male partners with selected variables. The findings of the study have several implications in nursing. The investigator recommended that similar study can be conducted on large sample by using different methods of teaching strategies.

Review After Study : After completion of the study two male partners who were the participants of the study had under gone non scalpel vasectomy procedure at kharipukuria BPHC on 20th July and 25th July of 2019. Name of those participants are Sanjay Laya (age 37 years) and Gopal Biswas (age 35 years).

MSN, Lecturer, RKMSP, MSCON

A Paper Presentation on – Tracheal Reconstruction Surgery –– Our Experience

Safika Zaman, Soumitra Ghosh

Objective – To share experience of Tracheal reconstruction surgery, follow up and outcome.

Introduction - Subglottic stenosis is a common outcome of any injury in sub-glottis. In high

grade stenosis we need to do tracheal resection anastomosis or partial crico-tracheal resection anastomosis. I will discuss four cases, their complication and outcome.

Case 1 : 12 year old male patient had accidental cloth line injury causing complete crico tracheal transection 3 years back underwent end to end tracheal anastomosis.

Case 2 : 25 year male patient developed subglottic stenosis secondary to intubation, Underwent partial crico-tracheal resection anastomosis one year back.

Case 3 : 28 year old male patient with poly-trauma followed by prolonged intubation presented developed complete subglottic stenosis, underwent tracheal resection and anastomosis 1 year back.

Case 4 : 30 year old male patient developed subglottic stenosis secondary to intubation, underwent tracheal resection and anastomosis 9 month back.

Follow up : Case 1 and case 2 had no complication, in case 3 we had re-stenosis at anastomosis site, case 4 had subcutaneous emphysema. Case 3 is treated with tracheal dilatation and local steroid injection at site, from a grade 4 stenosis currently patient have grade 2 stenosis. In case 4 subcutaneous emphysema subsided with conservative therapy.

Conclusion : Appropriate endoscopic assessment to evaluate the length and grade of stenosis is of great importance to plan the surgery and determine the final outcome. The whole approach is a team work consisting of ENT surgeon, anaesthesist, intensivists, speech and swallowing therapist and paramedical staffs. Complications may arise preoperatively or in the post op period. Meticulous follow up, prompt detection of complications and timely intervention will ensure a better outcome.

Dept. of ENT and HNS, RKMSP, VIMS

A Study to Assess The Level of Anxiety Among Nursing Students Who Were Exposed in Clinical Area During Covid-19 Pandemic in Selected Nursing Institution, Kolkata

3rd Year B.Sc. Nursing Students, Ma Sarada College of Nursing, RKMSP

Abstract : COVID-19 Pandemic situation had created a devastating condition world wise. While the entire world was quarantined, the nursing professional was always in the forefront. During this period nursing students were exposed to additional stressful factors which had created anxiety among them.

3rd year B.Sc nursing students of Ma Sarada College of Nursing, Ramakrishna Mission Seva Pratishthan had conducted a Quantitative descriptive survey study to assess the level of anxiety among thirty (30) Post Basic B.Sc nursing students, who were exposed in the clinical areas during COVID-19 pandemic period. The data was collected by structured 4 point rating scale for generalized anxiety disorder-7 during month of august 2021. The study finding reveals that 26.6% of sample had mild anxiety, 30% had moderate anxiety, 20% had moderately severe anxiety and 23.33% had severe anxiety. The

assessment of anxiety level of students will help them to develop adequate coping strategies for effective nursing practice in different clinical settings.

Anxiety is a normal phenomenon which is characterized by a state of apprehension or uneasiness arising out of anticipation of danger. Normal anxiety becomes pathological when it causes significant subject distress and impairment of functioning of the individual[1]. In the corona virus disease 2019 (COVID-19) pandemic medical and nursing stuffs are in direct contact with the patients and experience high work pressure. Direct contact with the patient could create anxiety problems in this group. Thus, the prevalence of such problem must be investigated in the medical and nursing personnel.[2] Considering several reported psychological consequences of COVID-19 and its spread, we decided to conduct a systemic review of the existing studies in this field with a view of impact of virus on nursing student's mental health, who are exposed in clinical field.

The aims of this study to examine and systematically review and analyses the impact of COVID19 on the prevalence of stress, anxiety and depression.[4]

Objectives :

- To assess the level of anxiety among nursing students who, exposed in the clinical area during COVID-19 pandemic.

Variables :

- Research variables : The level of anxiety of the students who are exposed in clinical area during COVID-19 pandemic.
- Demographic variables:
  - Age
  - Marital status
  - Distance between work place and home
  - Mode of transport
  - Presence of any co-morbidity in self and family
  - Family members going outside during pandemic situation
  - COVID-19 affected or deceased family member.

Review of Literature :

Review of Literature done related to measuring level of anxiety, study related to coping strategy and association between demographic variables with anxiety level.

Research Methodology :

In this study, In view of nature of the problem selected and objectives to be accomplished, **quantitative research approach** was considered appropriate for our research study.

The **descriptive research design** is taken for this nursing research which aims to obtain accurate and meaningful phenomenon under the study.

Setting of Study : The setting was Ramakrishna Mission Seva Pratishthan, Ma Sarada College of Nursing, Kolkata.

Population : Students of Post Basic B.Sc. Nursing 1st year and 2nd year who were exposed to Govt. COVID hospital during COVID pandemic situation.

Sampling Technique : Simple random sampling by lottery method.

Data Collection Tool & Technique :

Table 1 : Data Collection Tool and Technique

Sl No.	Variable	Tools
1.	Demographic Variable	Demographic Proforma
2.	Research Variables	Structured Questionnaire

Description of tool

The tool was divided into section-A and B.

- **Tool 1 :** The tool was designed to collect participants age, marital status, number of family members, distance between workplace and home, presence of any co-morbidity in themselves and family members etc.
- **Tool 2 :** Structured 4 point Rating Scale partly based on screening tool for Generalized Anxiety Disorder-7, to assess the level of anxiety.
- Tool validity was done to check its consistency and accuracy. Reliability was done and tool found reliable.

Final Data Collection Procedure :

After obtaining administrative and ethical permission, data was collected from Post Basic B.Sc. Nursing Students using structured questionnaire in the month of August 2021.

Table No. 2 : Frequency and Percentage Distribution of Study Population

n=30

Characteristics	Frequency	Percentage
Age		
20-30 years	10	33%
31-40 years	13	43.33%
41-50 years	6	20%
>50 years	1	33%
Marital Status		
Married	19	63.33%
Unmarried	11	36.67%
Distance between Workplace & Home		
1-30 km	17	56.67%
31-60 km	4	13.33%
61-90 km	2	6.67%
> 90 km	7	23.33%
Mode of transport		
Public Transport	22	73.33%
Own Vehicle	8	26.67%
walking	0	0%
Comorbidity present in family members		
Yes	16	53.33%
No	14	46.67%
Comorbidity present in self		
Yes	7	23.33%
No	23	76.67%
Family members going outside during pandemic		
Frequently	11	36.67%
Sometimes/Often	3	10%
Never	16	53.33%

Characteristics	Frequency	Percentage
Covid affected family members		
Yes	12	40%
No	13	43.33%
Affected but not severe	5	16.67%

Interpretation : Table 2 shows that among 30 students maximum students 13 (43.33%) are within age group of 31-40 years, 19 (63.33%) are married, maximum 17 (56.67%) students distance between work and workplace is 1-30 km, 22 (73.33%) students avail public transport, 16 (53.3%) students' family members are with comorbidity history, majority students i.e. 23 (76.67%) have not history of comorbidity of self, 16 (53.33%) students' family members never going outside during pandemic situation and maximum students i.e. 13 (43.33%) students' family members were not COVID affected.

Level of Anxiety Among Nursing Students

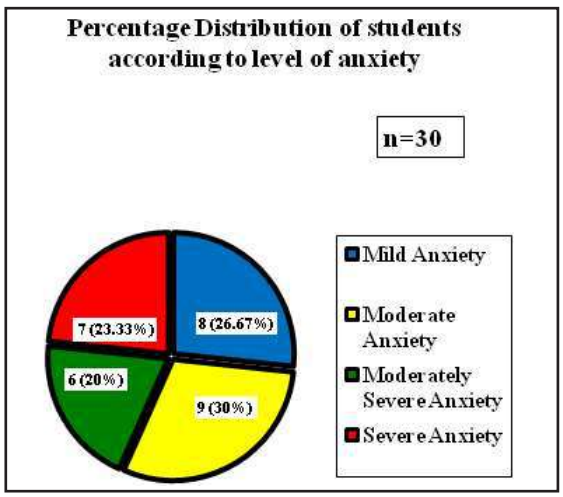

Figure 1: Pie diagram showing percentage (%) distribution of students according to level of anxiety

Interpretation: The pie diagram showed that among 30 Nursing Students maximum students i.e. 9(30%) had moderate anxiety, 8 (26.67%) students had mild anxiety, 7 (23.33%) students had severe anxiety and the rest 6 (20%) students had moderately severe anxiety.

Table 3 : Range, Mean, Median, and Standard Deviation of level of anxiety among nursing students who were exposed in clinical area during COVID-19 pandemic.

Variable	Range	Mean	Median	Standard Deviation
Anxiety Scores	0-21	9.23	8.39	5.91

Maximum score - 21

Minimum score - 0

Data presented in table-5 depicts that the mean anxiety of nursing students who were exposed in clinical area during COVID-19 pandemic is 9.23 and median value is 8.39. The table also depicts that level of anxiety of nursing students who were exposed in clinical area during COVID-19 pandemic is ranging from 0-21 with standard deviation of 5.91.

❖ **Major Finding of the Study :**

➢ Findings related to demographic variables

- Out of 30 samples, maximum students i.e. 13(43.33%) students were between 31-40 years.
- Maximum students i.e. 19(63.33%) students were married.
- For majority of the samples i.e. 17(56.67%) students, distance between workplace and home was within 1-30 km.
- Out of 30 samples, maximum students i.e.

22 (73.33%) students travelled by public transport.

- Out of 30 samples, majority of 16(53.33%) students had comorbidity present in their family.
- Majority of students i.e. 23(76.67%) students had no comorbidity in self.
- Out of 30 samples, maximum family members of sample 16(53.33%) students did not go outside during pandemic situation.
- Maximum students i.e. 13(43.33%) students did not have COVID affected family members.
- Findings related to level of anxiety among Post Basic B.Sc. nursing 1st and 2nd year students : The result shows that, out of 30 samples 8 (26.67%) students had mild anxiety, 9 (30%) had moderate anxiety, 6 (20%) students had moderately severe anxiety and 7 (23.33%) students had severe anxiety.

❖ **Recommendations :**

On the basis of the findings of the study, the following recommendations are made:

✓ A similar study can be replicated on a large sample; thereby findings can be generalized for a large population.

✓ A similar study can be conducted to assess the level of anxiety of not only nursing students but also nursing staffs and sister-in-charges.

❖ **Conclusion :**

The investigation shows that 9(30%) students had moderate level of anxiety, 8(26.67%) had mild anxiety, 7(23.33%) had severe anxiety and 6(20%) had moderately severe level of anxiety.

So the study suggests that exposure to clinical area during COVID 19 pandemic increases the level of anxiety among nursing students.

References :

- Savitsky Bella, Findingyifat etc. Anxiety And Coping Strategies among nursing students during Covid-19 pandemic, Nurse Education in Practice. July, 2020; vol-46.
- Islam Akhtarul Md, Barna Dey Sutapa, Raihan Han'netc. Depression and anxiety among university students during Covid 19 pandemic in Bangladesh. A cross-sectional webbased study. June 2020; Journal S. Plos.org..
- Xiong Huan, Yi Shuanglian, etc. The psychological status and self efficacy of nurses during Covid-19 outbreak : A cross-sectional survey. The journal of Health Care Organisation, provision and financing. 2020; vol 57:1-6. https://journals.Sagepubcom/doi/full/10.1177/0046958020957114.
- Qiu-Yue Zhong, Bizu Gelaye and Michelle A. Williams. Diagnostic validity of Generalized Anxiety Disorder-7(GAD-7) among pregnant women. PLOS ONE. 2015[cited 2015 Apr 27]; 10(4): e0125096. available from : https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4411061 /#_ffn_dectitle.