Journal of Patuakhali Medical College
www. pkmc.gov.bd ISSN 2791-2051
Volume 1 Number 2 July 2022

Editorial Board

Published by Patuakhali Medical College, Patuakhali-8600, Bangladesh

Journal of Patuakhali Medical College
www. pkmc.gov.bd ISSN 2791-2051
Volume 1 Number 2 July 2022

Contents

Instructions to the Authors

The Journal of Patuakhali Medical College invites the submission of original articles based on health, medical science, case reports, review articles and letters to editors. The journal is the official organ of Patuakhali Medical College covering all the fields of medical science. The editorial board further reserves the right to edit and reject the papers.

Instructions to authors

All submissions must be in English language articles are accepted for publication on condition that these are contributed solely to the journal of Patuakhali Medical College. Neither the editors or the publishers are responsible for the view and statement of the authors expressed in their contributions. It is the author's responsibility to obtain permission to reproduce the illustrations, tables etc. if they use such from other publications.

The following are the minimum requirements to submit for publication which is based on uniform requirement for the manuscripts submission to biomedical journals recommended by International Committee of Medical Journal Editors (ICMJ). Website for ICMJE is www.icmje.org.

Format for manuscript

1. Typing should be on one side of A4 size paper.
2. Manuscript should have uniform style, correct journal format carefully proofread for grammar spelling and punctuation.
3. Manuscript should be submitted in Microsoft Word file using font size 12 Calibri (body) characters, double-spaced except for abstract and author's information where single space should be used. There should be 1.5 cm margin from the top and the left and 1 cm from the right and bottom.
4. All author's name, affiliation at the time they did their work, the highest academic degrees, cell phone numbers and email addresses should be included.
5. A cover letter must be signed by the corresponding author and co-author(s). The letter must include the following statement "this manuscript is my/our own work and is not under consideration by another journal and this material has not been previously published''.
6. Abstract and keywords should be in the first page followed by the text prepared in the format of IMRAD (introduction, methods, results and discussion). Abstracts should contain Background, Methods, Results, Conclusion. A heading of the Keywords should follow the abstract. It will be followed by the name and contact of the corresponding author.

Requirements

1. Three hard copies of the article and one soft copy in MS Word (*.doc/*.docx format) with E-mail should be submitted to the Editor-in-Chief.
2. Standard acronyms/abbreviation should be used. Avoid acronym/abbreviation in the title and abstract except for standard one (e.g. DNA). However, the full term for which an acronym stands should precede its first use in the text unless it is a standard unit of measurement.
3. Statistical procedure should be described in the methods section supported by reference.
4. The editor reserves the customary right to style and if necessary, shorten the material for the acceptance purpose, to determine the priority and time of publication. Editor assumes that the submitted work will be based on honest observation. It is not a task

of the editor to investigate scientific fraud papers.

Criteria for submission of original manuscripts

The authors are requested to strictly follow the guidelines for submission of manuscript to the Journal of Patuakhali Medical College for publication. The following documents with manuscripts are to be submitted-

- Cover letter addressed to the Editor-in-chief of the journal
- A title page

In general, original article should be divided into following section

a. Title page
b. Abstract
c. Introduction
d. Methods
e. Results (table with titles and figures with legends)
f. Discussion
g. Acknowledgement (if any)
h. References

Each of the sections is to start on a separate page. Page should be number continuously beginning from the abstract.

TITLE

- Should be short (not more than 15 characters) and specific.
- Providing a distinct description of the complete article
- Should include the names of all authors with their designation and their affiliations
- Name of the department and institution where the work has been carried out
- The address of the corresponding author including contact number and email address
- Disclosure of conflict of interest if any
- Subtitles may be used to amplify the main title

ABSTRACT

- Title of the article
- Author's name should not be given
- Preferably within 250 words

INTRODUCTION

- The statement of the problem with a short discussion of its importance and significance
- Review of literature related to the problem with pertinent reference
- Objective, hypothesis benefits should be clearly stated

Methods

- Research type, place, time and sample characteristics
- Description of outcome and factor variables
- Selection criteria
- Approval of by ethical review committee
- Description of procedure method as drugs or chemical as applicable
- Statistical analysis should be described and be supported by reference

RESULTS

- Present results in a logical sequence in text table and illustration with most important finding first
- Tables and Figures should be numbered using Arabic numerals (e.g. Table 1, Figure 2)
- Do not duplicate data in table and figure
- Table and figure not supportive to the research are strictly discouraged
- Do not use internal horizontal and vertical gridlines in diagram. Use simple figure keeping the 2-dimensional image.

Discussion

- Start discussion with findings of the article first
- Progress discussion in logical manner with appropriate references

Acknowledgement

- Contribution by any person or department or institution should be placed as the last element of the text before references.

• Please put the acronyms of the authors name with their contribution in the script.
Concept:
Design:
Analysis:
Manuscript writing:

REFERENCES

• Should be followed by Vancouver format
• Should be numbered consecutively as superscript and should appear on top of line after the punctuation in the text
• At least 15 references should be included
• At the end of the article this should be listed in numerical order according to the order of citation in the text

Criteria for submission of review article

• Reviews are evidence-based article about a specific topic used relevant citation from the most recent literature with authors' conclusion on the subject.
• Text should be ranging from 3000 to 6000 excluding the title abstract reference, tables and keywords.

Criteria for submission of case report

• Report should be preferably based on atypical condition that have an educational value for practicing doctor
• Should not exceed 1000 words excluding the abstract, references and tables and no more than 10 references
• Author must ensure that patient's identity is protected both in the text and pictures before submitting the report

Criteria for submission of evidence-based commentary

• Short report based on focused questions arising from a clinical encounter and accompanied with summary of apprised evidence

Criteria for submission of letters to editor and comments

• Letter to editor or comments can be sent to provide commentary and analysis concerning an article published in the journal to give information about ongoing visits to draw attention to the subject. It may include an optional title table and references. These articles should not exceed 1000 words.

Author Agreement Statement

Title: …… …. …. … … …… …. …. … … …… …. …. … … …… …. …. … … …… …. …… ……. …. … … …

We, the undersigned, declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

We understand that the Corresponding Author is the sole contact for the Editorial process. He/she is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs.

Signature by all authors against their names:

Editorial

Supervised Learning in Postgraduate Training

Md. Zahirul Isalm[1], Md. Faizul Bashar[2]

Healthcare system is constantly changing. So, to keep pace with this rapidly changing system medical education also need to evolve with time. Supervised postgraduate medical training has become an area of focus in recent years as the healthcare system continues to evolve. This structured program, controlled by Bangabandhu Sheikh Mujib Medical University (BSMMU) and Bangladesh College of Physicians and Surgeons (BCPS) in Bangladesh and accredited by Bangladesh Medical and Dental Council (BMDC), prepares newly graduated physicians to provide high-quality care to their patients. Through supervised training, postgraduate physicians gain hands-on experience and develop their clinical skills under the direct guidance of experienced supervisors. This helps them become knowledgeable and skillful, enabling them to provide safe and effective care to their patients.

Learning by doing is very popular theory in postgraduate medical educational training.[1] As part of this training period, the trainee is expected to develop their skills, knowledge, and attitude through interactions with academic personnel at various levels, including supervisors, peers, and subordinates. Trainees must also interact with patients, their families, and hospital staff to gain practical experience. Establishing good relationships with all individuals involved creates an effective learning environment.[2]

In Bangladesh, the scarcity of skilled personnel and the high patient volume pose significant challenges for both trainees and supervisors in the learning environment. At times, they may be required to work beyond their levels of competence, and it can be difficult to define trainee duty hours. The issues of education, research, and ensuring safe clinical services also arise in this context.[3] All of these factors create a highly complex learning environment, particularly for the trainee. Postgraduate training comprises both clinical service and research work, both of which are critical components. Therefore, trainees must strike a balance between the two fields. Being a supervisor in postgraduate medical training is also a challenging but rewarding job. The challenges that a supervisor faces are diverse in nature that includes balancing clinical duties with his supervisory responsibilities, meeting the varied needs of trainees, keeping up with changes in medical education, addressing trainee performance issues, managing his workload.[4]

With the advancement of information technology in recent years postgraduate training program in Bangladesh has radically changed its nature, duration, supervision and overall success rate in exam. Now a day's residency program is very much popularized especially to the doctors who have no government jobs. As because this residency program in post-graduation training gives some monthly allowance to

1. Dr. Md. Zahirul Isalm, Junior Consultant (ENT), OSD, DGHS, Mohakhali, Dhaka, Bangladesh.
2. Dr. Md. Faizul Bashar, Professor & Principal, Patuakhali Medical College, Patuakhali, Bangladesh.

Correspondence: Dr. Md. Zahirul Isalm, Junior Consultant (ENT), OSD, DGHS, Mohakhali, Dhaka, Bangladesh.
Mobile-8801788554400, Email: xaheer33@yahoo.com

the private doctors who have been enrolled to these courses in different institutes.

Both the trainee and supervisor play significant roles during supervised training. It is crucial for the trainee to follow the program diligently, but in many institutions, accommodation is limited after working hours. A few institutions provide subsidized meals exclusively for postgraduate trainees. Unfortunately, the psychological well-being of trainees is often neglected, and errors can result in psychological trauma, necessitating a space for discussion. In some cases, students enrolled in the same course may not have comparable levels of knowledge or learning capacity, which can pose difficulties initially.

Supervised postgraduate medical training is essential for ensuring that newly graduated physicians are prepared to provide safe and effective care to their patients. Monitoring the program regularly, assessing the need, and revising the curriculum in consultation with eminent academicians are crucial steps that must be taken.

REFERENCES

1. Greenaway D. Securing the future of excellent patient care. Shape of Training, 2013.

2. Wiese A, Kilty C, Bennett D. Supervised workplace learning in postgraduate training: a realist synthesis. Med Educ. 2018;52(9):951-69.

3. Cantillon P, De Grave W, Dornan T. Uncovering the ecology of clinical education: a dramaturgical study of informal learning in clinical teams. Advances in Health Sciences Education. 2021 May;26(2):417-35.

4. Nguyen VN, Rees CE, Ottrey E, Davis C, Pope K, Lee S, Waller S, Palermo C. What really matters for supervision training workshops? A realist evaluation. Academic Medicine. 2022 Apr 5:10-97.

5. Volpp KG, Grande D. Residents' suggestions for reducing errors in teaching hospitals. New England Journal of Medicine. 2003 Feb 27;348(9):851-5.

Review Article

Subtotal Petrosectomy: Review of a Surgical Procedure

Md. Zahirul Isalm[1], Mst. Munira Akter Khanam[2]

ABSTRACT

Subtotal petrosectomy is the surgical technique where the middle ear and mastoid cavity is turned in to a blind sac, so that there is no communication between mastoid cavity and the exterior. This formation of blind sac is achieved by converting the tympanic cavity and mastoid cavity into a single cavity then sealing of the eustachian tube opening and closure of external auditory canal. This blind sac procedure makes the discharging ear dry. But it sacrifices middle ear structures resulting in no hearing preservation. But now a days there are different hearing aids can be fitted during the procedure. It is a challenging and intricate procedure that requires expertise and experience. This article provides a review of some aspects of subtotal petrosectomy.

Key Words: Subtotal petrosectomy, Blind sac closure

INTRODUCTION

The temporal bone is a complex structure that contains multiple important structures such as the inner ear, the facial nerve and the carotid artery. Parts of temporal bone are squamous, tympanic, mastoid, petrous and styloid process. During any ear surgery, it is essential to preserve these vital structures, which can make ear-related surgeries more complex. During early periods of ear surgeries surgeons faced a lot of difficulties. But the paradigm of otologic surgery has been shifted with the invention of microscopy, surgical drill and modern surgical instruments. In the journey of this long history of ear surgery different types of surgical approaches has been practiced within the temporal bone. And the modifications of these techniques have been done continuously. In cases of the surgery of temporal bone usually mastoid cavity is explored. Typically, during temporal bone surgery, the mastoid cavity is explored, and the petrous part is seldom addressed. During subtotal petrosectomy this difficult part is sometimes addressed. There are confusing terminologies present in the literature for describing this surgery like lateral petrosectomy, subtotal petrosectomy, total petrosectomy.[1] Sometimes lateral temporal bone resection and extended temporal bone resection are described in same heading.[2] But all of these are not subtotal petrosectomy. Subtotal petrosectomy is the surgery of temporal bone where mastoid cavity along with the middle ear is exenterated and obliteration of the cavity is done with fat or fascia and closure of eustachian tube and external auditory canal is performed to make a blind sac.[3] In this review article we have only considered the subtotal petrosectomy and blind sac closure as the same operation. And we reviewed different aspects of subtotal petrosectomy like the background, indication, anesthesia, incision, cavity obliteration, sac closure, eustachian tube obliteration, complications.

Background

Canal wall down mastoidectomy is a different type of surgery where there is no opportunity for the primary closure of the wound during the surgery. As a result, the mastoid cavity remains open after the

1. Dr. Md. Zahirul Isalm, Junior Consultant (ENT), OSD, DGHS, Mohakhali, Dhaka, Bangladesh.
2. Dr. Mst. Munira Akter Khanam, Assistant Surgeon, Badarpur Union Health & Family Welfare Center, Sadar, Patuakhali.

Correspondence: Dr. Md. Zahirul Isalm, Junior Consultant (ENT), OSD, DGHS, Mohakhali, Dhaka, Bangladesh. Mobile-8801788554400, Email: xaheer33@yahoo.com

surgery. For this canal wall down mastoidectomy is also known as open cavity mastoidectomy. Many a times this open cavity does not stop its discharging nature in the postoperative period. This makes the suffering of the patient even after the surgery.

Wound healing has different forms like healing with primary intension and healing with secondary intension.[4] Usually the surgical wounds that remains closed heals in primary intention, but the wound that is created after canal wall down mastoidectomy remains open. This type of wound has not enough surface contact to heal in primary intention. But in the secondary intention of wound healing it requires prolonged time period compared to the primary intention.[5] In this time period the wound needs adequate vascularity to sustain the wound healing process. But mastoid wound is in the bony confinement and after surgery there is a gap in the wound and soft tissue remain over this gap. These make the area poor in vascularity. This causes the wound to be healed in a more delayed fashion. For this Rambo tried primary closure of the mastoidectomy wound.[6] But problem is that the area has no support of the tissues that would close the wound. Free skin graft will get limited blood supply, sometimes pedicled flap may be helpful.

In subtotal petrosectomy exenteration of all the mastoid air cells, cavity obliteration and closure of the eustechian tube and the external auditory canal is performed. Sometime this is named as blind sac closure. In recent years this type of surgery is practiced for different types of pathologies. This was first described by Rambo in 1958.[6] Initially the operation was performed to provide dry ears in uncontrolled otorrhea sacrificing hearing functions. But now a days hearing loss is addressed with cochlear implantation and other types of implantation devices.[7] This concept of implantation has overcome all its criticism regarding hearing functions.

In early history it was challenging to treat mastoid abscess. Mastoid drainage was done by different physicians like Rolianus in 1671 then Petit in 1774.[8] After the drainage some patients got good results, but some did not. This was happened because they had little knowledge about cholesteatoma. Wilde introduced postaural incision and drainage and Schwartze and Eysell described the mastoidectomy procedure using a chisel and hammer for bone removal.[9] With a better understanding of different pathologies of the ear the aim of the surgery of ear has become the exteriorization of the mastoid cavity. Thus, the development of the radical mastoidectomy has been established. In the radical mastoidectomy the posterior canal wall has been removed to allow drainage of the mastoid and middle ear cavity through the external ear canal. The procedure of radical mastoidectomy does not preserve hearing. Subsequently, the modification was tried to preserve the hearing after mastoidectomy surgery. This modification of radical mastoidectomy is known as the modified radical mastoidectomy. Different Variations in the techniques of radical and modified radical mastoidectomy still remaining.[10,11] This modified radical mastoidectomy is also known as canal wall-down mastoidectomy.

The canal wall-down surgery continued as the standard to the mid twentieth century because this procedure achieved some success in preventing intracranial complications. But some cases like chronic discharge even after recurrent surgery it could not make the ear dry.

Challenge of canal wall down mastoid surgery is that the wound that is created by bone work cannot be closed primarily. Because our aim is to exteriorize the cavity creating an open cavity. Then the surgical wound is allowed to be healed with a long time. For this in cases of open mastoidectomy patients need long term care of the cavity and swimming is restricted. Patients with ear disease having discharge from the ear even after surgery has a poor quality of life. But in case of blind sac closure of the mastoidectomy wound there is no need for long term cavity care. Ans as there is no opening in the mastoid cavity there is no issue of swimming. But the indications of these two surgeries are not same.

Indications

There are different indications for this subtotal petrosectosectomy. The main goal of subtotal petrosectomy is to achieve a dry and safe ear.[12] Revision mastoidectomy is performed to achieve a dry ear but discharge may continue due to either cavity problem or due to disease itself. In these cases of recurrent chronic otitis media subtotal petrosectomy can be performed to achieve a dry ear. In the discharging mastoid cavity, the presence or absence of cholesteatoma is not considered as a factor of performing subtotal petrosectomy.[13] After creating a dry ear in refractory chronic otitis media the issue of hearing comes in the discussion. As the patients with otitis media suffer from chronic infection so there is some infection in mastoid cavity and middle ear that interferes the implantation devices for hearing. After the procedure of subtotal petrosectomy the ossicle is usually exenterated that also creates conductive hearing loss. Then the challenges of hearing rehabilitation using implantation devices is solved as there a sterile and closed cavity is formed. Some cases subtotal petrosectomy is performed for the cochlear implantation procedure. Usually cochlear implantation is done by cortical mastoidectomy with posterior tympanotomy. But in difficult cases like inner ear malformations, coclear obliteration and ossificans and some revision cases require subtotal petrosectomy to insert the implantation device into the cochlea.[3] Hearing reconstruction can be done in the same setting. Some author does the cochlear implantation in second setting as it may give the chance of second look surgery especially in case of cholesteatoma.[14] temporal bone fracture, class B3 tympanomastoid paraganglioma.[3] sometimes large vestibular schwannomas are resected as extended trans labyrinthine approach. In that cases some external ear was sealed in blind sac manner to reduce the risk of postoperative CSF leak.[15] Another important indication of subtotal petrosectomy is established CSF leak or CSF otorrhoea.[16]

Anesthesia

Many otologic surgery can be performed either local or general anesthesia. But subtotal petrosectomy surgery is performed under general anesthesia.[7] Because it takes a long time to perform the operation and there are many vital structures need to handle during this procedure. Sometimes nerve monitor is used to monitor the facial nerve.

Antibiotics

The use of antibiotics in subtotal petrosectomy is an important aspect of peri-operative care to prevent infections and ensure a successful outcome of the procedure. Subtotal petrosectomy is a time-consuming surgical procedure. So per-operative intravenous antibiotic is given that

continues for next three days. Intravenous Ampicillin and sulbactam is given intraoperatively in some centers. Postoperative antibiotic is given orally. oral amoxicillin and clavulanic acid is given for 7 days.[14]

Incision

This surgery is usually performed with post auricular incision. This surgery is performed in both primary and revision cases. So, plan of incisions depends on whether the case is primary one or revision. Because in revision surgery there is a previous scar remains in the post auricular region. So, in case of primary surgery wide-based postauricular incision can be given while in revision cases the previous scar can be extended superiorly and inferiorly.[7]

Flap elevation

After making the postauricular incision musculo-perosteal flap is elevated. There are different techniques of elevation of musculoperiosteal flap. Some make the T incision and makes posteriorly based flap.[3] Others use anterior based periosteal flap.[17,18]

Eustachian tube obliteration

The Eustachian tube is a narrow, thin-walled structure that connects the middle ear to the back of the throat and is responsible for maintaining normal middle ear pressure. Obliteration of the Eustachian tube is necessary during subtotal petrosectomy to convert the cavity into a blind sac. This obliteration is very important. Because the aim of the obliteration of the isthmus and the tympanic orifice of eustachian tube is to prevent ascending infection from nasopharynx. The mucosa of orifice of the tube is mobilized so that it can be folded back into the tube. The Eustachian tube is sometimes abraded, and bone wax and soft tissue is used to seal.[10] some author uses bone to obliterate Eustachian tube.[7] some author uses oxidized regerated cellulose along with bone wax.[14] All these procedures are aim to make fibrosis or scaring into the eustachian tube.

EAC closure

As a part of subtotal petrosectomy, removal of the external ear canal is necessary, and it requires closure to make it a blind sac, which prevents communication between the external ear and the internal cavity. Closure involves transecting the external canal at the level of osseocartilaginous junction and separating the lateral skin from the cartilage to make it free. In some cases, the length of this free skin can be as long as 1 cm. The skin is then closed in two or three layers, and the free skin of the external auditory canal is sutured in an everted manner.

Blind sac

A blind sac in subtotal petrosectomy refers to a cavity created during the surgical procedure that does not have an external opening to the ear canal. The term "blind sac" is used to describe this cavity because it cannot be directly visualized from the outside. Cavity that is formed after subtotal petrosectomy is closed all around forming a blind sac. Tympanic cavity and mastoid cavity are merged into a single cavity. But this cavity has two openings one is the eustachian tubal opening another is external auditory canal as tympanic membrane is being sacrificed during the procedure. These two openings are sealed to make a blind sac. Advantage of this blind sac is that this sac is isolated from the external world.

Cavity obliteration

After the resection of the bone the tympanic cavity and the mastoid cavity is unified to become a single cavity. This tympanomastoid cavity can be obliterated in different ways. Periosteum-muscle flap was first tried to close the gap.[14] Then Rambo proposed to obliterate the cavity with temporalis muscle flap.[6] Then some modification has come to obliterate the cavity. Cavity is obliterated with free fat along with temporalis muscle flap.[19,20] Fat can be collected from iliac fossa or abdomen.[17] Some center collect fat from lower abdomen. [14] Fat has some chances of shrinkage and may get infected for this harvested fat is treated with antibiotic before placement into the mastoid cavity.[18] Sometimes the cavity is closed with temporalis muscle flap. Closure of the mastoid cavity with temporalis muscle flap has some advantages. Advantages are that when subtotal petrosectomy is done with the indication of cholesteatoma and the risk of development of recurrent cholesteatoma into the closed sac. Then second look surgery can easily be performed. If the plan is to do cochlear implantation as staged procedure the temporalis muscle flap closure is useful because there is less adhesion with the muscle flap. And this flap also stabilizes the implant too. As the wound area has long term infection or multiple previous surgery the area has less vascularity, but muscle has no issue of impaired vascularity.[14]

Cochlear Implantation

Cochlear implantation is preferred method for hearing rehabilitation in patients with severe to profound sensorineural hearing loss. It is preferred because cochlear implantation has a very low rate of complications.[41] If there is infection in the receiver site it increases the complication rates. In case of open mastoid cavities there is a risk of recurrent mastoid infections, cavity needs its special care it makes the cochlear implant recipients in the risk of implant failure. This risk of recurrent infection in mastoid cavity demands a safe area around the implantation site. Subtotal petrosectomy with mastoid obliteration has shown excellent results in creating a safe cavity.[22,23] In the early cases of subtotal petrosectomy with cochlear implantation the implantation procedure was staged operation. That means second time they perform it as a part of second look procedure. With the time being more confidence is disease clearance made it possible to perform the cochlear implantation simultaneously during the primary subtotal petrosectomy.[24,25]

Wound closure

The previous sections have described the closure of the external auditory canal as a blind sac. The size and location of the wound created during this procedure depend on the extent of petrous bone removal. In the case of a subtotal petrosectomy, the closure of the wound is a crucial step to avoid postoperative complications such as wound breakdown. The number of layers used to close the postauricular wound can vary based on the surgeon's preference, with some using two layers and others using three.[14]

Complications

Like any surgery subtotal petrosectomy is not a complication free surgical procedure. Rather temporal bone is a complex structure that needs special attention during surgery to reduce postoperative complications. Some complications are seen after subtotal petrosectomy more commonly like post auricular fistula, recidivism, facial nerve

palsy.[7] Wound breakdown due to infection is also seen. Some authors have seen that infection related complications are seen less commonly in the cases where subtotal pertosectomy is performed after recurrent surgery.[9] Because they receive multiple antibiotics, topical steroids before surgery. One of the unusual complications is the entrapment of squamous epithelium into the blind sac. This may turn into cholesteatoma formation. As the postoperative cavity closed so clinically it cannot be examined. Diffusion weighted MRI can detect this cholesteatoma. In some center intracranial abscess formation.[9] Issue of hearing loss sometime considered as a complication of subtotal petrosectomy. Debate may arise whether we call it as a complication or call it as a consequence of the procedure. As middle ear is exenterated as part of the procedure itself. Sometime during procedure there might have some injury to the inner ear that leads to sensory hearing loss and vestibular injury resulting in vertigo, unsteadiness, and difficulty with coordination.

CONCLUSION

Maintaining the integrity of the multiple neurovascular structures during surgery is very much challenging during mastoid surgery. In view of these challenges, blind sac closure is an effective treatment option for cases of chronic ear discharge with severe hearing loss. In addition, hearing restoration after surgery makes subtotal petrosectomy an excellent choice for managing various challenging situations.

REFERENCES

1. Zanoletti E, Martini A, Emanuelli E, Mazzoni A. Lateral approaches to the skull base. Acta Otorhinolaryngol Ital. 2012 Oct;32(5):281-7.

2. Masteron L, Donnelly N. squamous cell carcinoma of the temporal bone. In: Watkinson JC, Clarke RW, editors. Scott-Brown's otorhinolaryngology and head and neck surgery. 8th editin Volume 2. Boca Raton: CRC Press; 2018;1430-1.

3. Prasad SC, Roustan V, Piras G, Caruso A, Lauda L, Sanna M. Subtotal petrosectomy: Surgical technique, indications, outcomes, and comprehensive review of literature. The Laryngoscope. 2017 Dec;127(12):2833-42.

4. Singh S, Young A, McNaught CE. The physiology of wound healing. Surgery (Oxford). 2017 Sep 1;35(9):473-7.

5. Strodtbeck F. Physiology of wound healing. Newborn and infant nursing reviews. 2001 Mar 1;1(1):43-52.

6. Rambo JH. Primary closure of the radical mastoidectomy wound: a technique to eliminate postoperative care. Laryngoscope. 1958 Jul;68(7):1216-27.

7. Çatlı T, Çelik Ç, Olgun L. Subtotal Petrosectomy, Cavity Obliteration, and Blind Sac Closure of the External Auditory Canal: Retrospective Analysis of a Series Including 44 Cases.Turkish Arch Otolaryngol 2014;52:81-6.

8. Jackler R, Briggs RJ, Luxford WM. Chronic ear surgery: a historical review. Otology & Neurotology. 1994 Jul 1;15(4):558-67.

9. Dornhoffer JL, Gluth MB. The Chronic Ear.Thieme. New York:2016;2**.**

10. Berrettini S, Ravecca F, de Vito A, Forli F, Valori S, Franceschini SS. Modified Bondy radical mastoidectomy: long-term personal experien ce. J Laryngol Otol. 2004;118(5):333–7.

11. Sanna M, Facharzt AA, Russo A, Lauda L, Pasanisi E, Bacciu A. Modified Bondy's technique: refinements of the surgical technique and long-term results. Otol Neurotol. 2009;30(1):64–9.

12. Kos MI, Chavaillaz O, Guyot JP. Obliteration of the tympanomastoid cavity:

long term results of the Rambo operation. The Journal of Laryngology & Otology. 2006 Dec;120(12):1014-8.
13. Muzaffar SJ, Dawes S, Nassimizadeh AK, Coulson CJ, Irving RM. Blind sac closure: a safe and effective management option for the chronically discharging ear. Clin Otolaryngol. 2017 Apr 1;42(2):473-7.
14. Lyutenski S, Schwab B, Lenarz T, Salcher R, Majdani O. Impact of the surgical wound closure technique on the revision surgery rate after subtotal petrosectomy. European Archives of Oto-Rhino-Laryngology. 2016 Nov;273(11):3641-6.
15. Falcioni M, Mulder JJ, Taibah A, De Donato G, Sanna M. No cerebrospinal fluid leaks in translabyrinthine vestibular schwannoma removal: reappraisal of 200 consecutive patients. The American journal of otology. 1999 Sep 1;20(5):660-6.
16. Altuna X, García L, Martínez Z, de Pinedo MF. The role of subtotal petrosectomy in cochlear implant recipients. European Archives of Oto-Rhino-Laryngology. 2017 Dec;274:4149-53.
17. Sanna M, Dispenza F, Flanagan S, De Stefano A, Falcioni M. Management of chronic otitis by middle ear obliteration with blind sac closure of the external auditory canal. Otology & neurotology. 2008 Jan 1;29(1):19-22.
8.
18. Kraus M, Hassannia F, Bergin MJ, Al Zaabi K, Rutka JA. Long-term outcomes from blind sac closure of the external auditory canal: our institutional experience in different pathologies. The Journal of International Advanced Otology. 2020 Apr;16(1):58.
19. Gacek RR. Total obliteration of the chronic draining ear--how I do it. The Journal of otolaryngology. 1979 Dec;8(6):515-6.
20. Fisch U, Mattox D. Microsurgery of the skull base. Thieme; 1988.
21. Ovesen T, Johansen LV. Post-operative problems and complications in 313 consecutive cochlear implantations. The Journal of Laryngology & Otology. 2009 May;123(5):492-6.
22. Szymanski M, Ataide A, Linder T. The use of subtotal petrosectomy in cochlear implant candidates with chronic otitis media. Eur Arch Otorhinolaryngol 2016;273:363–70.
23. Barañano CF, Kopelovich JC, Dunn CC, Gantz BJ, Hansen MR. Subtotal petrosectomy and mastoid obliteration in adult and pediatric cochlear implant recipients. Otology & neurotology. 2013 Dec;34(9).
24. Vincenti V, Pasanisi E, Guida M, Di Trapani G, Sanna M. Hearing rehabilitation in neurofibromatosis type 2 patients: cochlear versus auditory brainstem implantation. Audiol Neurotol 2008;13:273–80.
25. Henseler MA, Polanski JF, Schlegel C, Linder T. Active middle ear implants in patients undergoing subtotal petrosectomy: long-term follow-up. Otol Neurotol 2014;35:437–41.

Original Article

Presentation of Acute Kidney Injury in Diarrhoeal Disease

F. M Atiqur Rahaman[1], Abu Bakker Siddik[2]

ABSTRACT

Background: Diarrhea is one of the common illnesses requiring hospitalization globally. A significant contributor to acute kidney injury is dehydration brought on by diarrhea.

Methods: A cross-sectional study was carried out in the department of Medicine of the Patuakhali Medical College during June 2019 to July 2020. Total 746 Patients with diarrhea were included. Serum creatinine level>50 mmol/L considered as acute kidney injury. Categorical data were displayed as number percentages and the chi-square test was done for statistical significance and p value <0.05 considered as significant. Continuous scale data were provided as mean standard deviation.

Results: Out of 746 diarrhea cases 37% has developed acute kidney injury. Among them 33.8% presented with fever, vomiting and dehydration at admission, 13.1% convulsion with fever and 15.6% vomiting with dehydration at admission.

Conclusion: Diarrhoea with fever, vomiting and dehydration at admission, diarrhoea with convulsion and fever, diarrhoea with vomiting and dehydration at admission found to be related with acute kidney injury.

Key Words: Diarrhoea, Acute kidney injury, Dehydration

INTRODUCTION

Acute kidney injury (AKI) is characterized as a sudden or rapid deterioration in renal filtration function, as shown by a significant increase in serum creatinine content and/or a decrease or absence of urine output.[1]

One of the most prevalent diseases requiring hospitalization on a global scale is diarrhoea.[2,3] Volume depletion caused by severe diarrhoea is a well-known risk factor for AKI, although other factors such as co-morbidity and polypharmacy are also possible causes. Further describing the prevalence of AKI in diarrheal sickness is critical since AKI has been linked to an increased chance of developing chronic kidney disease, longer hospital stays, higher expenses, and death.[4-7] The measurement of creatinine is inexpensive, simple, and has quick results. The National Institute of Health Care and Excellence guideline advises that creatinine measurement be coupled with monitoring of urine output to monitor the renal functions.[8] Creatinine may gradually build up after the decline in kidney function, therefore serum creatinine tests may not represent the new situation for several days. Prevalence of acute kidney injury in diarrhoeal disease is higher in the community, because children with acute kidney injury are being treated by primary care practitioners who have not come to the hospital.[9] Also the real data regarding the frequency of diarrhea as well as kidney disease is always not available in developing countries.[10] Because of missing the community data and health care systems of developing counties usually preserve the hospital data only. There are different causes of acute kidney injury in the community. Community-acquired AKI is usually associated with diarrhea and sepsis.[9] There are some challenges also remains in the management of AKI with diarrhoea.[10] This study focuses on the presentation of diarrhoea to find out its relationship with acute kidney injury.

1.Dr. F. M Atiqur Rahaman, Associate professor, Department of Medicine, Patuakhali Medical College Hospital, Patuakhali, Bangladesh.

2.Dr. Abu Bakker Siddik, Medical Officer, Department of Medicine, Patuakhali Medical College Hospital, Patuakhali, Bangladesh.

Correspondence: Dr. F. M Atiqur Rahaman, Associate professor, Department of Medicine, Patuakhali Medical College Hospital, Patuakhali, Bangladesh. Mobile-8801718533734, Email: fmatiqur@gmail.com

METHODS

This cross-sectional study was carried out in Patuakhali Medical College Hospital at the Department of Medicine during June 2019 to July 2020. The study design was approved by the institutional review committees of Patuakhali Medical College. A total of 746 patients with diarrhoea were selected for this study. The study excluded all patients with AKI due to conditions other than diarrhea, including septic shock, excessive diarrhea, intrinsic renal dysfunction, urethral obstruction, chronic renal failure, and autoimmune kidney diseases such interstitial nephritis and bloody diarrhea. Patients were classified as having AKI if they had diarrhea and increased serum creatinine (>50 mmol/L). Demographic features, laboratory measurements, and information of hospital course that included medication exposures, length of hospital stay, and recovery of AKI were the variables of interest retrieved from the database. Events occurring from admission to discharge with recovery or referred to another hospital were analyzed and evaluate to see the relationship of acute renal damage in diarrhea patients with their presentations. Data were process and analyses using SPSS (Statistical Package for Social Sciences) software version 23. The chi- square test was used to analyze the data and $p < 0.05$ is considered as significant. Categorical data were presented as number percentage and continuous scale data were presented as mean standard deviation. The summarize data were present in the table and chart.

RESULTS

In this study 275(37%) of these patients developed AKI, and 471 of these patients had normal creatinine levels and were not considered to have AKI. The average age was 56.38 (±11.67) years, the minimum age was 23 years, and the maximum age was 72 years. The majority age was found in the fifth and sixth decade (Table-1). Figure 1 shows female patients were predominant in this study (56.0%) and rest male was 44.0%.

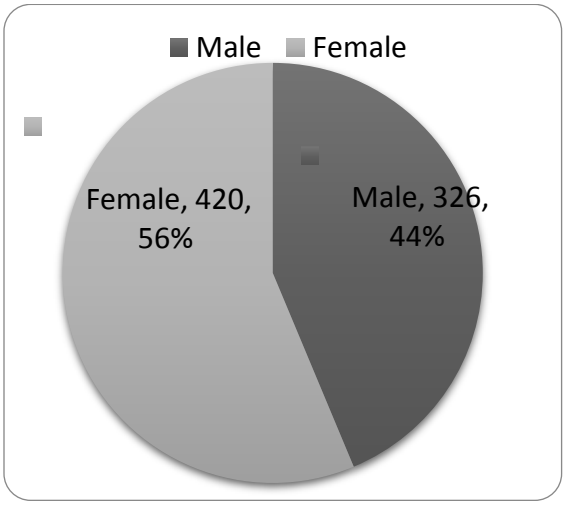


Figure 1: Sex distribution of the study population (n=746)

About one third patients found acute kidney injury (Figure-2). Among these acute kidney injury patients about one third had presented with fever, vomiting and dehydration at admission; about 13.1% presented with convulsion and fever; about 15 % presented with vomiting and dehydration at admission (Table-2).

Table 1: Age wise distribution of study population Age (yrs)

Age in years	Number	Percentage
21-30 yrs	86	11.53
31-40 yrs	135	18.10
41-50 yrs	147	19.71
51-60 yrs	193	25.87
>60 yrs	185	24.80
Total	746	100.00

Table 2: Factors related with acute kidney injury in patients with diarrhea in Patuakhali Medical College Hospital (n=746)

Factors	AKI n=275	Without AKI n= 471	p value
Fever+Vomiting +Dehydration at admission	93 (33.8)	69 (14.6)	0.001
Convulsion+Fever	36 (13.1)	11 (2.3)	0.001
Vomiting +Dehydration at admission	43 (15.6)	17 (3.6)	0.001
Vomiting	36 (13.1)	132 (33.8)	0.001
Fever	16 (5.8)	117 (24.8)	0.001
Dehydration at admission	14 (5.1)	23 (7.0)	0.299
Convulsion	12 (4.4)	22 (5.1)	0.653
Abdominal distension	25 (9.1)	41 (8.7)	0.858
Total	275(100)	471(100)	

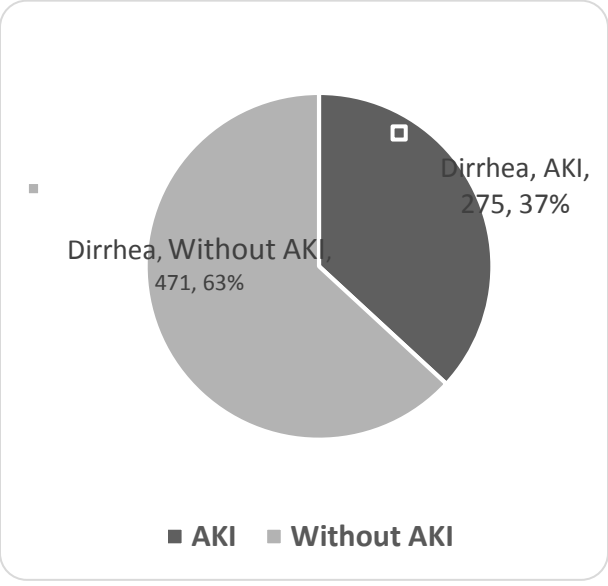


Figure 2: AKI in patients with diarrhea in Patuakhali Medical College Hospital

DISCUSSION

In present study observed that the mean age was 56.38 (±11.67) years, minimum age was 23 and maximum age was 72 years. Desai P and Deokar study also observed that the mean age of study participants was 53.71 ± 17.34 years, with maximum age 85 and minimum 16 years. A total of 48.3% patients were from 51-70 years of age, 58.6% patients were male and rest 41.4% was female.[11] Kim et al. reported the mean age was 44.5 ± 13.1 years and the proportion of female was 38.1%.[12]

In our study about one-third patients with diarrhoea has found acute kidney injury and most of our cases recovered. In a study, it is found that about 26.2% of patients presented with AKI at the time of admission with diarrhoea.[13] Most of them also recovered. But incomplete recovery from acute kidney injury is associated with progress in kidney disease and resulting into prolonged hospital stay and sometimes into chronic kidney disease. Acute kidney injury needs supportive care. Therefore, early identification of acute kidney injury in patients with diarrhea is an important issue.[14-16]

In this study we observed convulsion with fever is related with AKI in 13.1% cases. Shahrin et al. also reported convulsions in AKI.[1] vomiting with dehydration at admission 15.6% in AKI; fever, vomiting, and dehydration at admission 33.8% in AKI. Several factors may contribute to acute kidney injury. Among them hypernatremic dehydration is important in diarrhea. In diarrhea hypernatremia is developed due to the inability of excretion of a sodium.[17,18] In hypernatremic dehydration, fluid shift occurs to maintain intravascular volume.[19,20] Dehydration in the patients with diarrhoea is frequently underestimated.[21] In this time some form of volume depletion as well as

hypernatremia is developed. Thus dehydration closely related to AKI in diarrhea.[12]

CONCLUSION

Diarrhoea with fever, vomiting and dehydration at admission, diarrhoea with convulsion and fever, diarrhoea with vomiting and dehydration at admission are related to AKI. And only fever and only vomiting is also related with AKI but only dehydration at admission, only convulsion and only abdominal distension is not significantly related to AKI.

REFERENCES

1.Shahrin L, Sarmin M, Rahman AS, Hasnat W, Mamun GM, Shaima SN, Shahid AS, Ahmed T, Chisti MJ. Clinical and laboratory characteristics of acute kidney injury in infants with diarrhea: a cross-sectional study in Bangladesh. J Int Med Res. 2020 Jan;48(1).

2.Kirk MD, Angulo FJ, Havelaar AH, Black RE. Diarrhoeal disease in children due to contaminated food. Bulletin of the World Health Organization. 2017 Mar 3;95(3):233.

3.Bradshaw C, Zheng Y, Silver SA, Chertow GM, Long J, Anand S. Acute kidney injury due to diarrheal illness requiring hospitalization: data from the National Inpatient Sample. Journal of General Internal Medicine. 2018 Sep;33:1520-7.

4.Greenberg JH, Coca S, Parikh CR. Long-term risk of chronic kidney disease and mortality in children after acute kidney injury: a systematic review. BMC Nephrol. 2014;15:184.

5.Coca SG, Singanamala S, Parikh CR. Chronic kidney disease after acute kidney injury: a systematic review and meta-analysis. Kidney Int. 2012;81(5):442–8.

6.Bucaloiu ID, Kirchner HL, Norfolk ER, Hartle II JE, Perkins RM. Increased risk of death and de novo chronic kidney disease following reversible acute kidney injury. Kidney international. 2012 Mar 1;81(5):477-85.

7.Healthcare Cost and Utilization Project (HCUP). HCUP NIS database documentation. Agency for Healthcare Research and Quality: Rockville, MD, USA. 2018.

8.Das SK, Afroze F, Ahmed T, Faruque AS, Sarker SA, Huq S, Islam MM, Shahrin L, Matin FB, Chisti MJ. Extreme hypernatremic dehydration due to potential sodium intoxication: consequences and management for an infant with diarrhea at an urban intensive care unit in Bangladesh: a case report. Journal of medical case reports. 2015 Dec;9(1):1-6.

9.Chertow GM, Burdick E, Honour M, Bonventre JV, Bates DW. Acute kidney injury, mortality, length of stay, and costs in hospitalized patients. Journal of the American Society of Nephrology. 2005 Nov 1;16(11):3365-70.

10.Shahrin L, Chisti M, Huq S, Munirul Islam M, Golam Faruque AS. Intractable diarrhea with recurrent hypernatremia: experiences of management difficulties from a diarrhoeal treatment centre of Bangladesh. J Clin Case Rep. 2014;4(460):2.

11.Desai P, Deokar V. Study of acute renal failure due to gastroenteritis in a tertiary health care centre. Journal of Critical Reviews. 2020;7(12):380-3.

12.Kim JE, Ha J, Kim YS, Han SS. Effect of severe diarrhoea on kidney transplant outcomes. Nephrology. 2020 Mar; 25(3):255-63.

13.Munos MK, Walker CLF, Black RE. The effect of oral rehydration solution and recommended home fluids on diarrhoea mortality. Int. J. Epidemiol. 2010; 39: i75–87.

14.Maes B, Hadaya K, de Moor B et al. Severe diarrhea in renal transplant patients: Results of the DIDACT study. Am. J. Transplant. 2006; 6: 1466–72.

15.Heung M, Steffick DE, Zivin K, Gillespie BW, Banerjee T, Hsu CY, Powe NR, Pavkov ME, Williams DE, Saran R, Shahinian VB. Acute kidney injury recovery pattern and subsequent risk of CKD: an analysis of veteran's health administration data. American Journal of Kidney Diseases. 2016 May 1;67(5):742-52.

16.Han SS, Shin N, Baek SH, Ahn SY, Kim DK, Kim S, Chin HJ, Chae DW, Na KY. Effects of acute kidney injury and chronic kidney disease on long-term mortality after coronary artery bypass grafting. American heart journal. 2015 Mar 1;169(3):419-25.

17.McPhee SJ, Papadakis MA and Rabow MW. Current medical diagnosis & treatment 2010. New York: McGraw-Hill Medical, 2010.

18. Adrogue HJ and Madias NE. Hypernatremia. N Engl J Med 2000; 342:1493–1499.

19.Chisti MJ, Salam MA, Bardhan PK, Sharifuzzaman, Ahad R, La Vincente S, Duke T. Influences of dehydration on clinical features of radiological pneumonia in children attending an urban diarrhoea treatment centre in Bangladesh. Annals of tropical paediatrics. 2010 Dec 1;30(4):311-6.

20.Chisti MJ, Pietroni MA, Smith JH, Bardhan PK, Salam MA. Predictors of death in under-five children with diarrhoea admitted to a critical care ward in an urban hospital in Bangladesh. Acta paediatrica. 2011 Dec;100(12):e275-9.

21.Shahrin L, Chisti MJ, Huq S, Nishath T, Christy MD, Hannan A, Ahmed T. Clinical manifestations of hyponatremia and hypernatremia in under-five diarrheal children in a diarrhea hospital. Journal of tropical pediatrics. 2016 Jun 1;62(3):206-12.

Original article

Effects of Oral Contraceptive Pill on Serum Glucose and Phosphorus

Suriya Akhter Jahan[1], Shamima Akhter[2], Md. Rafiqul Hoque[3], Md. Hanif Howlader[4], Binoy Krishna Golder[5], Prabir Kumar Saha[6]

ABSTRACT

Background: The oral contraceptive pill is very much popular and effective in birth control. Correct use of the oral contraceptive pill helps in family planning preventing unwanted pregnancy. And this pills are also used in menstrual disorders. Many biochemical parameters of women taking oral contraceptives are disturbed due to metabolic alteration induced by its hormone content.

Methods: This study carried out in the Department of Biochemistry, Mymensingh Medical College in collaboration with the Model Family Planning Clinic of Mymensingh Medical College Hospital, Mymensingh during the period from July 2019 to June 2020 to evaluate the status of serum glucose and phosphorus in oral contraceptive user women. Data were analyzed with the help of SPSS version 21.

Results: Hundred age-matched women were selected and grouped as 50 oral contraceptive user women and 50 oral contraceptive nonuser women. Mean(±SD) levels of serum glucose and phosphorus of oral contraceptive user women were 5.55±0.34 mmol/L and 2.03±0.64 mg/dl respectively. And Mean(±SD) levels of serum glucose and phosphorus of oral contraceptive non-user women were 5.89±1.75 mmol/L and 4.02±0.26 mg/dl respectively. Serum phosphorus significantly reduced in oral contraceptive users while compared with non-oral contraceptive users ($p < 0.001$).

Conclusion: Serum phosphorus level was lower in oral contraceptive user. But no difference in serum glucose level is seen between contraceptive user and non-user.

Key Words: Oral contraceptives, Serum glucose, Serum phosphorus.

INTRODUCTION

The combined oral contraceptive pill (OCP) is a major birth spacing method that is commonly practiced. The "original pill" was entered into the market in the early 1960s. Each tablet contained 100-200 mcg a synthetic estrogen and 10 mg of progestogen.[1] Among the available modern methods of contraception, about 30% couples in Bangladesh use oral contraceptive.[2] Oral contraceptive pill stops ovulation from ovaries and causes anovulatory menstrual cycle. It also makes the cervical mucus thick and unfavorable to sperm migration.[3] Sukhi is the most used oral contraceptive pill in Bangladesh containing estrogen and progestin.[4] Combined estrogen-progestin oral contraceptives are most efficient and accessible convenient method of contraception among the available methods.[5] Combined oral contraceptives show some beneficial effects like reduction the risk of developing iron deficiency anemia, PID, benign neoplasm of breast and ovary,

1. Dr. Suriya Akhter Jahan, Assistant Professor (Department of Biochemistry), Patuakhali Medical College, Patuakhali, Bangladesh.
2. Dr. Shamima Akhter, Associate Professor (Department of Biochemistry), Mymensingh Medical College, Mymensingh, Bangladesh.
3. Dr. Md. Rafiqul Hoque, Associate Professor (Department of Biochemistry), Kishorgonge Medical College, Kishorgonge, Bangladesh.
4. Dr. Md. Hanif Howlader, Associate Professor (Department of Biochemistry), Sher-e-Bangla Medical College, Barishal. Bangladesh.
5. Dr. Binoy Krishna Golder, Assistant Professor (Gynae), Patuakhali Medical College, Patuakhali, Bangladesh.
6. Dr. Prabir Kumar Saha, Associate Professor (Pathology) (CC), Sher E Bangla Medical College, Barishal, Bangladesh.

Correspondence: Dr**.** Suriya Akhter Jahan, Assistant Professor (Department of Biochemistry), Patuakhali Medical College, Patuakhali, Bangladesh. Mobile-8801919828926, Email: dr.suriya33@gmail.com

dysmenorrhea.[6] They have some side effect also. The major side effects are malignancy in some organs like breast, liver, cervix, cardiovascular disorders like hypertension, myocardial infarction, hemorrhagic or ischemic strokes and venous thrombo-embolic disorder.[7]

The status of micronutrients in humans can be affected by various factors such as changes in lifestyle, environmental conditions, dietary habits, and the active components of hormonal agents.[8] Modifications in the bioavailability or tissue-level concentration of these elements may have a noteworthy impact on health risks and the development of certain disorders.[9]

Biomedically glucose is the most important monosaccharide that cannot be hydrolyzed into simpler carbohydrate. It is a major fuel for tissue, universal fuel for fetus, ready source of energy, only food for brain.[10] Sex steroids in OCP alter insulin sensitivity and affect glucose metabolism.[11]

Phosphorus is a highly abundant element with a wide distribution and exists in both inorganic and organic phosphate forms within the human body. Phosphorus ions are crucial for normal bone mineralization and play essential roles in signal transduction, nucleotide metabolism, and enzyme regulation.[12] Serum phosphorus level might be reduced in OCP users.[13]

METHODS

This cross-sectional study was carried out in the Department of Biochemistry, Mymensingh Medical College in collaboration with the Model Family Planning Clinic of Mymensingh Medical College Hospital, Mymensingh during the period of July 2019 to June 2020. In this study, 350 apparently healthy married women were purposively selected from the outpatient department of Model Family Planning Clinic of Mymensingh Medical College Hospital. Among them, 250 women of reproductive age group (20-35) years with history of taking oral contraceptive pills (sukhi) at least for 3 months duration were selected as contraceptive user group. Age matched physically healthy 100 women from the same geographic location were selected as contraceptive non-user group, who were not using any hormonal contraceptive method. Women with systemic illness like diabetes mellitus, tuberculosis, kala-azar were excluded from our study. Individuals who had a BMI exceeding 30, were using oral contraceptives other than combined estrogen-progesterone preparations or were taking medications that interfered with serum glucose or phosphorus were excluded from the study. Each study participant provided written consent after being informed, and ethical approval for the study was granted by the Ethical Committee of Mymensingh Medical College and Hospital. Height, body weight, and blood pressure measurements were taken, and the body mass index (BMI) was calculated using a standard formula. Serum glucose levels were determined using an enzymatic method involving GOD-PAP, while serum phosphorus levels were determined using a colorimetric method with a test kit. Statistical analysis was conducted with the assistance of SPSS version 21. All biochemical measurements were expressed as mean values and standard deviations, and comparison between two groups was performed using Student's unpaired t-test.

RESULTS

In our study, two groups were similar. The age and BMI of the contraceptive user group and the contraceptive non-user are shown in Table 1.

Table 1: Demographic features of the Study population.

Demographic Features	Contraceptive User Mean±SD	Non- user Mean±SD	P value
Age (Years)	28.18 ± 2.18	28.14 ±3.08	0.49
BMI (kg/m^2)	21.89 ±0.68	21.91 ±0.67	0.42

Table 2 shows the level of serum glucose and phosphorus in study population. The study revealed that mean(±SD) of serum fasting glucose levels in contraceptive user and no-user group were not different from each other. Mean(±SD) of serum phosphorus levels were 2.03±0.64 mg/dl and 4.02±0.26 mg/dl in contraceptive user and no-user group respectively. The analysis showed highly significant difference($p < 0.001$) in mean serum phosphorus levels between two groups.

Table 2: Comparison of Serum glucose and Phosphorus levels of the study subjects.

Variable	Contraceptive User Mean±SD	Non- user Mean±SD	P value
Glucose (mmol/L)	5.55±0.34	5.89±1.75	0.27
Phosphorus (mg/dl)	2.03±0.64	4.02±0.26	< 0.001

DISCUSSION

While looked at the serum phosphorus level we found that the oral contraceptive pill user had almost half the level of serum phosphorus than the non-users ($p<0.001$).

Major human need for birth control is fulfilled by oral contraceptives with unrivalled effectiveness.[14] When the pill is used properly, it is able to prevent pregnancy and various menstrual disorders effectively.[15] Hormone content in oral contraceptives can changes many biochemical parameters of OCP user women due to metabolic alteration. Research has been ongoing for many decades to investigate the risks and benefits associated with various contraceptive methods. Numerous studies on contraceptives and family planning have been carried out in Bangladesh. The rural community of Bangladesh is mostly used sukhi (combined oral contraceptive) as it is distributed with free of cost.[16] Prolonged use of oral contraceptives can impact various metabolic processes in the body, leading to detectable clinical abnormalities.[17]

The present study found no significant difference in fasting glucose levels between users and non-users of oral contraceptive pills, which is consistent with several other studies.[18, 19]

Some authors reported that commonly used oral contraceptive have no adverse effect on glucose or insulin metabolism, according to result from a large population-based survey on US women. They pointed out that women who were currently taking OCP tended to be younger, leaner, free from any disease condition and have fewer negative factors that influence glucose metabolism than former or never users.[20] Steroids in contraceptive pills had no effect on regulation of blood sugar level because both fasting and post IVGTT insulin level was increased after treatment with any types of OCP.[21]

Several studies conducted on Indian and European populations have reported that serum glucose levels were higher in women who used oral contraceptives compared to those who did not use them.[22, 23] Adams et al. demonstrated that progestin in oral

contraceptive pills reduced insulin sensitivity and caused insulin resistance.[22] The steroids present in oral contraceptive pills can affect glycemic regulation by either reducing the number of insulin receptors in peripheral tissues or by altering the post-receptor response mechanism, leading to increased peripheral resistance to insulin.

Our study found a significant decrease in serum phosphorus levels among women who use oral contraceptives compared to those who do not. The development of secondary hyperparathyroidism was observed in patients taking oral contraceptive pills, and the decrease in serum phosphorus levels was proportional to the duration of OCP use.[24] The inhibitory effect of estrogen on the calcium mobilization effect of parathyroid hormone (PTH) or vitamin D can result in secondary hyperparathyroidism, leading to the excretion of a large amount of phosphate through urine and ultimately causing hypophosphatemia.[25]

CONCLUSION

The study found that serum phosphorus levels in contraceptive users were nearly half of those in non-users, while there was no significant difference in serum glucose levels between women who use oral contraceptives and those who do not. It is recommended that further studies with larger populations be conducted to investigate any alterations in other biochemical parameters and to conduct organ function tests.

REFERENCES

1. Park K. Park's Textbook of Preventive & Social Medicine. 23rd edn. M/S. Banarsidas Bhanot: Jabalpur (India); 2015.

2. Reatfield PK & Kamal N. Population and Family Planning in Bangladesh. J Pak Med Assoc 2013; 63(4): 73-82.

3. Kumar, Pratap & Malhotra N. Jeffcoate's Principle of Gynaecology. 7th edn. Jaypee Brothers Medical Publishers (Pvt.) Ltd., India; 2008. P 798-809.

4. Hollander D. Bangladeshi women weight a variety of factors when choosing a contraceptive. Int Fam Plan Perspect 2003; 29: 1-3.

5. Christin-Maitre S. History of oral contraceptive drugs and their use worldwide. Best practice & research Clinical endocrinology & metabolism. 2013 Feb 1;27(1):3-12.

6. Ory HW. The non-contraceptive health benefits from oral contraceptive use. Fam Plann Perspect 1982; 14: 182-4.

7. Obisesan KA, Adenaike FA, Okunola MA. Effects of oral contraceptives on serum total protein, albumin, globulin and cholesterol levels in Ibandan, Nigeria. WAJM 2002; 21(3).

8. Fallah S, Sani FV, Furoozrai M. Effect of contraceptive pill on the selenium and zinc status of healthy subjects. Contracept 2009; 80: 40-3.

9. Olaniyan DA, Tailor S. Vitamin & antioxidant: The body fluid is not water. Nig Med J 2004; 16:20-31.

10. Rodwell VW, Bender DA, Botham KM, Kennelly PJ, Weil PA. Harper's Illustrated Biochemistry. 30th edn. McGraw Hill Education. New York; 2015.

11. Godsland IF. The Influence of female sex steroids on glucose metabolism and insulin action. J Int Med 1996; 738: 1-60.

12. Berndt TJ, Schiavi S, Kumar R. Phosphatonins and the regulation of Phosphet. Annu Rev Physiol 2007; 69: 341-59.

13. Hameed A, Areej T, Majeed T & Asraf M. Effect of oral and injectable contraceptives on serum calcium, magnesium and phosphorus. J Ayub Med Coll 2001; 13(3): 24-5.

14. Elgee NJ. Medical Aspects of Oral Contraceptive. Ann Int Med 1970; 72: 409-18.

15. Suhl L, Sylvial & Yeager FB. Update on Oral Contraceptive Pills. Am Fam Physician 1999; 60(7): 2073-84.
16. Amin R, Choudhury SR, Mariam AG & McCarthy J. Family planning in Bangladesh. Int Fam Plann Persp 1987; 13: 13-6.
17. Ramos D, Stanczyk & Roy. Metabolic and endocrinological effects of steroidal contraception. Accessed 14th April 2020.
18. Wynn V & Doar J. Some effects of oral contraceptives on carbohydrate metabolism. The Lancet 1969; 294 (7624): 761-6.
19. Klipping C & Marr J. Effects of two combined oral contraceptives containing ethinyl estradiol combined with either drospirenone or desogestrel on lipids, hemostatic parameters and carbohydrate metabolism. Contraception 2005; 71(6): 409-16.
20. Maureen H & Catherine C. Oral contraceptive do not affect glucose metabolism. Am J Obstetric Gynecol 2000; 183: 389-95.
21. Vermeulen A & Thiery M. Effect of oral contraceptives on carbohydrate metabolism. Diabetologia 1970; 6: 519-23.
22. Adams PW, Godsland IF, Wynn V, Melros J & Oakley NW. Comparison of effects of different combined oral-contraceptive formulations on carbohydrate and lipid metabolism. The Lancet 1979; 1: 1045-9.
23. Godsland IF, Crook D, Simpson R, et al. The effects of different formulations of oral contraceptive agents on lipid and carbohydrate metabolism. The New Eng J Med 1990; 323: 1375-81.
24. Akinloye O, Adebayo TO, Oguntibeju O, Oparinde, et al. Effects of contraceptives on serum trace elements, calcium and phosphorus levels. West Indian Med J 2011; 60(3): 308-15.
25. Moses AM & Notmann DD. Secondary hyperparathyroidism caused by OCP. Arch Intern Med 1982; 142 (1):128-9.

Original Article

Clinicopathological Study of Adnexal Mass in a Rural Medical College Hospital

A K M Maruf Raza[1], Md. Rezaul Hossain[2], Siddhartha Sankar Das[3], Md. Ziaul Karim[4], Md. Faizul Bashar[5]

ABSTRACT

Background: Adnexal mass is a frequent occurrence in females and can present with a broad range of clinical, morphological, and histopathological features. Accurate clinical diagnosis with histopathological confirmation is crucial for effective patient management, as adnexal masses can range from a ruptured ectopic pregnancy to a malignant lesion with a risk of mortality. We wanted to examine the clinicopathological characteristics of tubo-ovarian lesions.

Methods: This is a six-year retrospective study conducted at Jahurul Islam Medical College Hospital in Kishoregonj, which included a total of 550 cases of adnexal masses. Clinical information was obtained from the hospital's Obstetrics and Gynecology department database, while histopathological data was gathered from the Pathology department. Data analysis was performed using Microsoft Excel software.

Results: Ovarian pathology constituted 76.36% of the adnexal masses, while 23.63% of cases originated from the fallopian tube. We recorded 168 neoplastic and 252 non-neoplastic lesions from the ovarian lesions. Ninety-one percent (91.1%) of the ovarian neoplasms were benign, 7.1% malignant, and 1.8% were borderline malignant. Serous tumors were the most common (46.4%), followed by mucinous and germ cell tumors (23.2% each). The commonest non-neoplastic lesion was endometriotic cysts (34.5%). The tubal lesions were mostly due to ectopic pregnancy, followed by salpingitis, tubo-ovarian abscess, and endometriosis. The common clinical presentations included menstrual complaints such as irregular bleeding and menorrhagia, as well as lump and pain in the abdomen.

Conclusion: An accurate history taking with clinical and radiological examination followed by histopathology of the resected specimen reveals the diagnosis.

Key Words: Adnexal mass, Tubo-ovarian mass, Ectopic pregnancy, Endometriosis.

INTRODUCTION

The differential diagnosis of an adnexal mass (which includes the ovary, fallopian tube, and surrounding connective tissue) can be intricate and could be from functional cysts, ectopic pregnancies or ovarian malignancies.[1] Among the non-neoplastic lesions, inflammation of the fallopian tubes is common followed by ectopic pregnancy and endometriosis. Non neoplastic lesion of ovary includes benign cystic lesions, inflammation and ectopic pregnancy.[2] Ovarian tumors are mostly benign among the neoplastic lesions in the reproductive age groups, and around 30% are malignant in the postmenopausal women.[3] Ovarian tumors come with diverse clinical manifestation, and often present with non-specific, non-gynecological symptoms. Classified into three types such as epithelial cell tumors, germ cell tumors, and sex cord stromal cell tumors,[4] these tumors often do not exhibit symptoms in the early stages, resulting in advancement of the condition while being diagnosed. The term "Silent Killer" is used to describe ovarian cancer due to its high mortality rate, which is mainly attributed to late detection.[5] Histopathological examinations is done to obtain a conclusive diagnosis of an adnexal mass.[6] However, ultrasonography can detect around 90% of adnexal masses providing clinical evidence about the origin of the adnexal mass,[7] characterized by a lump in the ovary, fallopian tube, or surrounding

1. Dr. A K M Maruf Raza, Associate Professor of Pathology, Jahurul Islam Medical College, Bajitpur, Kishoregonj.
2. Dr. Md. Rezaul Hossain, Associate professor, Physiology Department. PKMC, Patuakhali.
3. Dr. Siddhartha Sankar Das, Assistant Professor of Pediatrics, PKMC, Patuakhali.
4. Dr Md. Ziaul Karim, Assistant professor, Department of Skin & VD, PKMC, Patuakhali.
5. Professor Md. Faizul Bashar, Professor and Principal, Patuakhali Medical College, Patuakhali, Bangladesh.

Correspondence: Dr. A K M Maruf Raza, Associate Professor, Department of Pathology, Jahurul Islam Medical College, Kishoregonj, Mobile: 01711306123, Email: drmarufraza@gmail.com

connective tissue. Being a common gynecological problem, it affects nearly 0.17% - 5.9% of asymptomatic and 7.1% to 12% of symptomatic women.[8] Ectopic pregnancies, benign neoplasms, endometriotic cysts, and tubo-ovarian abscesses are common causes of adnexal masses in the reproductive age group, while malignancy is uncommon. In post-menopausal women, both primary and secondary neoplasms of the ovary should be considered as differential diagnoses for adnexal masses.[9]

We wanted to conduct this study to assess the frequency, clinical and histo-morphological characteristics of adnexal masses along with different types of ovarian neoplasms.

METHODS

The researchers from the department of Pathology at Jahurul Islam Medical College in Bajitpur, Kishoregonj conducted this retrospective study on adnexal masses that were surgically treated at the Department of Obstetrics and Gynecology over a period of six years (2015 to 2021). Detailed clinical history and other relevant data of 550 cases were collected from the hospital database. Patients with incomplete history, incomplete clinical data, without related investigations and without histopathological diagnosis were excluded from the study. Patients undergoing chemo and radiotherapy for ovarian cancer also excluded. Newly diagnosed and operated cases with histopathological diagnosis of tubo-ovarian mass were included in the study. Informed written consent were taken during the admission and during operation of the masses. Specimens were received with proper labeling. The department of Pathology performed histopathological analysis on the resected specimen, after applying the appropriate staining technique (haematoxylin and eosin). The collected data was then processed and analyzed using the Microsoft Excel software.

RESULTS

Figure 1 showed that two-third (n=420, 76.36%) of adnexal masses had connections with ovarian pathology and one-third (n=130, 23.63%) were due to tubal lesion. Among the 130 tubal lesions, most common pathology was ectopic tubal pregnancy and/or ruptured ectopic tubal pregnancy (42.3%), nonspecific salphingo-oophoritis (40%), tubo-ovarian abscess (8.5%), tubal endometriosis (7.7%) and Tubercular salphingo-oophoritis (1.5%) shown in Figure 1.

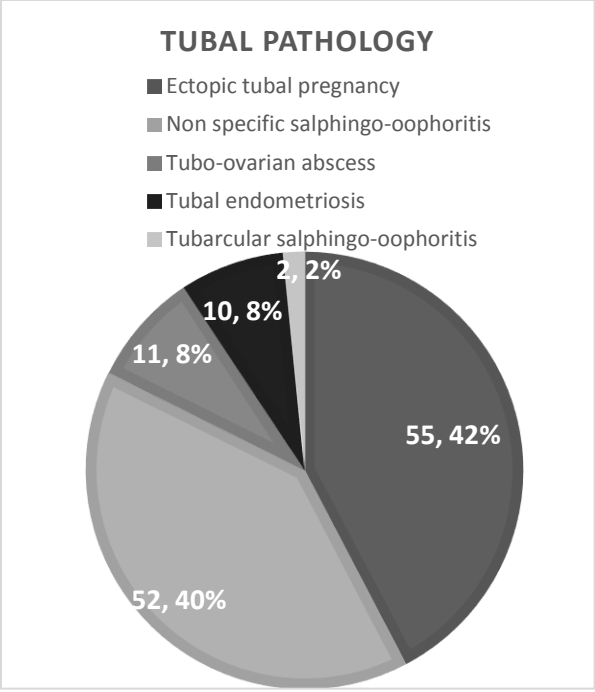


Figure 1: Distribution of tubal pathology among tubo-ovarian mass (n=130)

We recorded 168 neoplastic and 252 non-neoplastic lesions out of the 420 ovarian lesions. Majority of the neoplastic lesions were found to be benign (91.1%), while the rest were borderline malignant and malignant. Among the benign tumors, serous

cyst adenomas (44.6%) were the most common, followed by germ Cell tumors (23.2%) and mucinous cyst adenoma (17.8%). Of the 12 malignant tumors identified, six were mucinous cyst adenocarcinoma, while three each were serous cystadenocarcinoma and endometrioid adenocarcinoma. (Table 1) The mucinous group contained the borderline tumor. Endometriotic cyst was the most common non-neoplastic mass at 34.5% (n=87), followed by inclusion cysts at 28.5% (n=256). Figure 2 displays the distribution of non-neoplastic ovarian lesions.

Table 1: Histopathological distribution of ovarian tumor (n=168)

Histopathological type	No.	%
Surface epithelial tumours	**120**	**71.4**
i.Serous tumour	78	46.4
a. Serous Cystadenoma	75	44.6
b. Serous Cystadenocarcinoma	3	1.8
ii. Mucinous tumour	39	23.2
a. Mucinous cystadenoma	30	17.8
b. Mucinous cystadenocarcinoma	6	3.6
c. Borderline mucinous cystadenocarcinoma	3	1.8
iii. Endometrioid adenocarcinoma	3	1.8
Germ cell tumour	**39**	**23.2**
i. Benign cystic teratoma (dermoid cyst)	36	21.4
ii. Struma ovary	3	1.8
Sex cord stromal tumour	**9**	**5.3**
i. Fibroma/ Fibrothecoma	6	3.6
ii. Granulosa cell tumour	3	1.8

The highest number of benign ovarian tumors was observed in the age group of 21-40 years. The majority of the non-neoplastic lesions were observed in the 41-60-year age group, followed by the 21-40-year age group. All malignant tumors were observed in the 41-60-year age group. The distribution of ovarian lesions in different age groups is presented in Table 2.

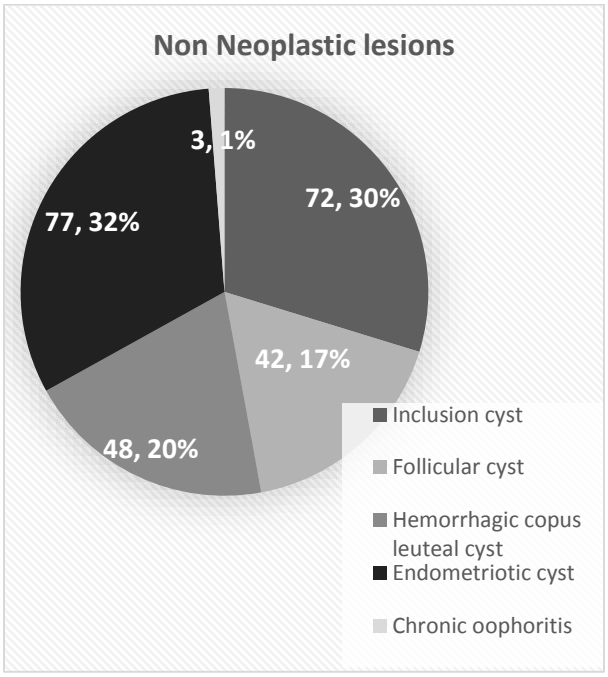


Figure 2: Distribution of non-neoplastic ovarian lesions (n=252)

Abdominal pain (Table 3) was the most frequent clinical presentation reported among neoplastic and non-neoplastic lesions in our study, with 29.3% of patients presenting with this symptom were within the reproductive age group. The feeling of an abdominal lump was the second most common presentation, affecting 25% of patients, followed by menstrual abnormalities in 11% of patients. In addition, incidental detection of an ovarian mass was the third most common presentation, affecting 18.6% of patients.

Table 2: Distribution of ovarian lesion in different age group

Age (in years)	Neoplastic Tumour								Non-Neoplastic lesion				
	Serous tumours		Mucinous tumours			Germ cell tumour	Endometrioid adenocarcinoma	Sex cord tumour	Inclusion cyst	Follicular cyst	Endometriotic cyst	Copus leuteal cyst	Chronic oophoritis
	B	M	B	BL	M								
<20	3	-	-	-	-	3	-	-	6	-	-	6	-
21-40	21	-	18	3	-	21	-	6	12	9	33	9	-
41-60	33	3	9	-	6	12	3	3	42	30	33	27	3
>60	9	-	-	-	-	3	-	-	3	-	3	-	-

The majority of ovarian tumors (53.7%) had a maximum diameter ranging from 1cm to 2cm. Among surface epithelial tumors, the largest number (51.11%) fell within the 10-19 cm range. Malignant tumors were found to be larger in size compared to benign tumors. A large proportion of benign tumors (63.63%) were cystic, whereas a significant number of malignant tumors (37.7%) were solid.

Variegated appearance was observed in 20.45% of benign tumors and 26.22% of malignant tumors. A quarter of benign tumors (25%) were unilocular, while only 18.3% of malignant tumors were found to be unilocular.

Table 3: Clinical presentation of patients (n=550)

Clinical presentation	No. of patients with percentage
Pain abdomen	161 (29.3%)
Abdominal lump	138(25%)
GI symptoms	34(6.2%)
Post-menopausal bleeding	22(4%)
Menstrual abnormality	60(11%)
Infertility	33(6%)
Incidental finding	102(18.6%)

DISCUSSION

Among the 550 cases of tubo-ovarian mass 76.36% were due to ovary related pathology and 23.63% cases were due to different tubal pathology. Most common tubal pathology were ectopic tubal preganancy, nonspecific salphingo-oophoritis, tubo-ovarian abscess, tubal endometriosis. Two cases of tubercular salphingo-oophoritis were found. These findings are similar with Mittal et al, who investigated 75 cases of adnexal masses and found that 24% of them originated from the fallopian tube, while 68% of them were of ovarian origin.[10] However, our results contradict those of Tripathi et al. analyzed 100 adnexal mass cases and reported that 56% of them were due to ectopic gestation, 10% were of ovarian origin, 31% had a dual origin, and 3% of the cases originated from the broad ligament.[11] In our study tubal pathology was less than to ovarian pathology. Among the tubal pathology, the ectopic pregnancy is the surgical emergency requiring immediate surgery but in almost all the ovarian pathology needs surgical intervention including neoplastic and non-neoplastic lesions. In actual cases may be salphingo-oophoritis related tubo-ovarian

lesion are common but treated by antibiotics in the outdoor practice and resolved so need not to be admitted in the hospital.

Ovarian tumors possess histological diversity. The incidence of surface epithelial tumors is highest worldwide, making them the most commonly observed type of tumor.[3] In our study of 420 ovarian lesions, there were 168 neoplastic lesions. Surface epithelial tumors (71.4%) formed the main bulk of neoplastic tumors. The distribution frequency of ovarian tumors in our study was comparable to the findings of Swami GG et al. who reported an incidence of 61.6% for epithelial tumors and 21.7% for germ cell tumors.[12] Mondal et al.[13] also found similar result in their study. In our study, 34.5% of the non-neoplastic lesions were endometriotic cysts, which may explain the presence of menstrual abnormality. Al-Fozan H et al. also reported a high incidence of ovarian endometriosis (45.9%).[14] According to the findings of the study, the incidence of benign ovarian tumors was higher in women belonging to the reproductive age group (21-40 years), whereas all cases of malignant ovarian tumors were observed in women between 41-60 years of age. Manivasakan J noted an even distribution of benign ovarian tumors among women in the reproductive and perimenopausal age groups.[15] In contrast, Ashraf A et al found that a significant proportion (71.4%) of malignant ovarian tumors were observed in women belonging to the reproductive age group.[16] A study conducted in the USA has reported a higher incidence of ovarian cancer in elderly women who are in the perimenopausal stage.[17]

Common clinical presentation were lower abdominal pain (29.3%) followed by feeling of abdominal lump (25%). Cause of this abdominal pain was due to ovarian torsion, tubo-ovarian abscess and chronic pelvic inflammatory disease. Torsion, intracystic haemorrhage, adhesion, central necrosis are common causes of pain in tubo-ovarian mass lesion.[18] Menstrual abnormalities found in this study were irregular bleeding, menorrhagia and dysmenorrhoea. Findings similar to our study regarding abdominal pain, lump and menstrual abnormalities were seen by Kanthikar SN *et al.*[19] A considerable proportion of ovarian masses were identified incidentally through radiological examination or during histopathological examination of hysterectomy with salpingo-ophorectomy specimens due to leiomyoma, adenomyosis, or cervical prolapse. We found the size of the ovarian masses ranged from 1-22.5 cm. Non-neoplastic lesions were predominant in masses smaller than 5 cm, while the larger ones (>15 cm) were predominantly mucinous and endometriotic lesions. Benign tumours were smaller in comparison to malignant tumour. Benign tumours are less variegated on cut section than to malignant. Malignant tumours were more solid in nature. These finding are in co-ordinance with other study.[20]

CONCLUSION

The most frequent tubal pathology observed was ectopic tubal pregnancy. Ovarian neoplasms were another leading cause of adnexal masses, with serous cyst adenoma being the most common benign tumor. Benign ovarian tumors were predominantly observed in the reproductive age group, while malignant tumors were more common in post-menopausal women. Abdominal lump and lower abdominal pain were the most commonly reported clinical complaints, often associated with torsion and tubo-ovarian abscess.

REFERENCES

1. Graham L. ACOG Releases Guidelines on management of adnexal masses. Am Fam Physician. 2008;77(9):1320–3.
2. Kumar V, Cotran RS, Robbins SL. The Female genital Tract. In: Kumar V, Cotran RS, Robbins SL (Editor). Basic Pathology 6th Ed. Harcourt Asia PTE LTD 2001:1039-52.
3. Berek JS, Natarajan S. Ovarian and fallopian tube cancer. In: Berek JS (Editor). Berek and Novak's Gynaecology 15th Ed. Wolter Kluwer Health (India) Private Limited 2012:1350-427.
4. Doufekas K, Olaitan A. Clinical epidemiology of epithelial ovarian cancer in the UK. Int J Women's Health. 2014; 6: 537-45.
5. Jaffer Y, Ehsan N, Ambreen. Clinical presentation of ovarian tumors. Journal of Surgery Pakistan (International). 2013;18(2):82-6.
6. Gentry-Maharaj A, Menon U. Screening for ovarian cancer in the general population. Best Pract Res Clin Obstet Gynaecol. 2012;26:243-56.
7. Brown DL, Dudiak KM, Laing FC. Adnexal masses: US characterization and reporting. Radiology. 2010;254(2):342-54.
8. Bhargava S, Bhatia G. Clinicopathological study of Tubo ovarian masses- A study of 110 cases. Indian J Pathol Oncol 2021;8(1):26-31
9. Bhagde AD, Jani SK, Patel MS, Shah SR. An analytical study of 50 women presenting with an adnexal mass. Int J Reprod, Contracept, Obstet Gynecol. 2016;6(1):262–5.
10. Mittal A, Kundal RK, Kaur K, Mathur M, Sandhu A, Kaushal N. Clinico-Pathological Correlation of Tubo-Ovarian Lesions. Ann Int Med Dent Res. 2018;4(3):51–5.
11. Tripathi U, Munda G. Study of correlation of ultrasonography with surgical evaluation of adnexal masses: a prospective study. Int J Reprod, Contracept Obstet Gynecol. 2018;7(10):4218–22.
12. Swamy GG, Satyanarayana N. Clinicopathological analysis of ovarian tumor - a study on five year samples. Nepal Med Coll J. 2010;12(4):221-3.
13. Mondal SK, Bandopadhyay R, Nag DR, Roychowdhury S, Mondal PK, Sinha SK. Histological pattern, bilaterality and clinical evaluation of 957 ovarian neoplasms. A 10 year study in a tertiary hospital of Eastern India. J Can Res Ther. 2011;7:433-7.
14. Al-Fozan H, Tulandi T. Left lateral predisposition of endometriosis and endometrioma. Obstet Gynaecol. 2003;101:164-6.
15. Manivasakam J, Arounssalame B. A study of benign adnexal masses. Int J Reprod Contracept Obstet Gynecol. 2012;1(1):12-6.
16. Ashraf A, Shaikh S, Ishfaq A. The relative frequency and histopathological pattern of ovarian masses. Biomedica. 2013;28:98-102.
17. Quirk JT, Natarajan N. Ovarian cancer incidence in the United States 1992-1999. Gynaecol Oncol. 2005;97:519-23.
18. Kumar P & Malhotra N. Tumours of Ovary. In: Jeffcoate's Principles of Gynaecology, 7th edition, Jaypee Brothers Medical Publishers, India, 2008;524.
19. Kanthikar SN, Dravid NV, Deore PN, Nikumbh DB, Suryawanshi KH. Clinico-histopathological analysis of neoplastic and non-neoplastic lesions of the ovary: a 3 year prospective study in Dhule, North Maharashtra, India. Journal of Clinical and Diagnostic Research. 2014;8(8):FCO4-7.
20. Ellenson LH, Pirog EC. The Female Genital Tract. In: Kumar V, Abbas AK, Fausto N and Aster J (Editor). Robbins and Cotran Pathologic Basis of Disease 8th Ed. W B Saunders Company, Philadelphia, USA 2014:1021-34.

Case Report

Genital Tuberculosis Causing Primary Infertility with Secondary Amenorrhea

AKM Maruf Raza[1], Ismat Ara[2], Dil Afroz[3]

ABSTRACT

Genital tuberculosis is a rare condition and represents a minority of tuberculosis cases, accounting for less than 1% of all cases. Here, we present the case of a 21-year-old female who complained of primary infertility for 6 years, post-coital bleeding, and secondary amenorrhea for 2 years. On per vaginal examination, the cervix was swollen and the internal os was tightly closed. Biopsy along with other regular investigation was done. The biopsy results showed the presence of granulomatous inflammation, which was consistent with tuberculosis. The patient responded to antitubercular therapy and her menstrual cycle become regular.

Keywords: Cervix, Infertility, Tuberculosis, Amenorrhea

INTRODUCTION

Tuberculosis (TB) affecting the cervix of the uterus is a rare type of genital tuberculosis that presents in various ways. It comprises only 0.1-0.65% of all tuberculosis cases and 5-24% of cases of genital tract tuberculosis.[1] The majority of affected women are in the reproductive age group, and the commonly affected sites are the endometrium, fallopian tubes, and ovaries. Lesions in the cervix are uncommon and can manifest as exophytic, ulcerative, or polypoid growths.[2] In countries with a high prevalence of TB, genital TB is a well-recognized cause of infertility. It usually develops secondary to TB in other sites, particularly the lungs.[3]

CASE REPORT

A 21-year-old nulliparous woman married for 6 years came to the Gynae and Obs. department of Jahurul Islam Medical College hospital outdoor with the complaints of amenorrhea for 2 years and expecting to get pregnant for 6 years. She also complains about occasional post coital bleeding. She had regular menstrual cycle 2 years back. She was treated with cabergoline and desogestrel, ethinylestradiol and norethisterone for six months. But her menstruation did not start and was unable to become pregnant. Pelvic organ ultrasonography revealed normal and her husband's semen analysis was done, the report was normal. There was no persistent cough or weight loss in the patient's medical history. No past, present or family history of tuberculosis. So, her provisional diagnosis was chronic cervicitis with cervical stenosis.

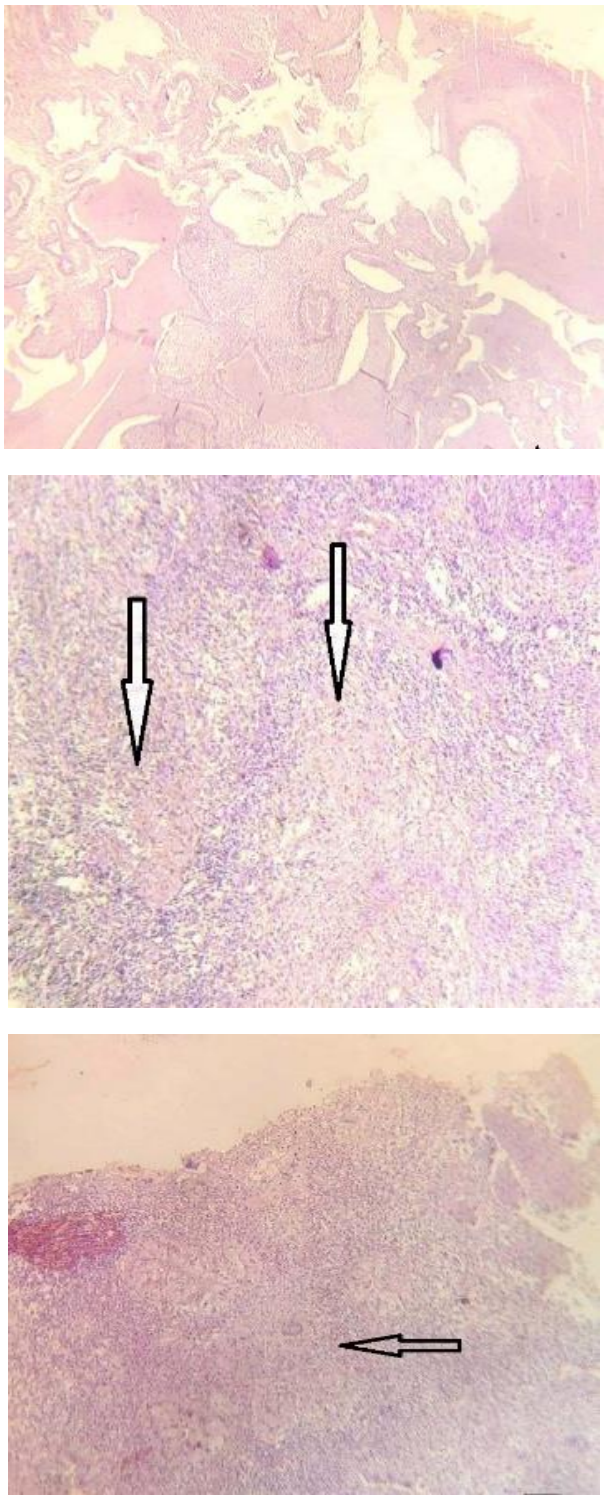
On general physical examination, all the vital signs were within normal range with BMI of 19.5 kg/m^2. There were no palpable lymph nodes. On abdominal, per vaginal and per rectal examination were normal. On speculum examination, the cervix was unhealthy, hypertrophied and tightly closed. She was advised to get admitted in gynae and obs. ward for further evaluation. After admission, examination under general anesthesia was done. The external os was found hypertrophied and the internal os was stenosed. Diagnostic biopsy was done. The histopathology revealed granulomatous inflammation, consistent with tuberculosis (Photograph 1). Routine hematological test reveal high ESR and hemoglobin at its lower

1. Dr. A K M Maruf Raza, Associate Professor of Pathology, Jahurul Islam Medical College, Bajitpur, Kishoregonj, Bangladesh.

2. Prof. Ismat Ara, Professor, Department of Gynecology and Obstetrics, Jahurul Islam Medical College, Bajitpur, Kishoregonj, Bangladesh.

3. Dr. Dil Afroz, Assistant Professor, Department of Gynecology and Obstetrics, Jahurul Islam Medical College, Bajitpur, Kishoregonj, Bangladesh.

Correspondence: Dr. A K M Maruf Raza, Associate Professor, Department of Pathology, Jahurul Islam Medical College, Kishoregonj, Mobile: 01711306123, Email: drmarufraza@gmail.com



Photograph 1: Photomicrographs show a case of cervical tuberculosis. Granuloma (Arrow) composed of epithelioid cells with central caseation necrosis (Haematoxilin & Eosin).

normal range. Chest radiograph were normal and sputum for AFB were negative.

Patient was given antitubercular treatment for six months. During and after anti TB, patients menstrual cycle become regular and occasional post coital bleeding subsided. On speculum examination, the cervix was healthy with normal cervical os was found. Cervical smear revealed normal endo and ecto cervical cells. Patient was sent to infertility corner for conception management.

DISCUSSION

Tuberculosis is a chronic bacterial infection caused by Mycobacterium Tuberculosis frequently seen in the developing and less developed countries. It is one of the important causes of chronic pelvic inflammation and infertility in women. The fallopian tubes are the commonly affected site, followed by the endometrium and ovaries. The cervix is a rare site of involvement and constitutes 5-24% of all cases of genital tuberculosis.[4]

Genital tuberculosis is prevalent among individuals aged between 20 to 40 years in developing countries, and is a significant socioeconomic burden, particularly among those in the reproductive age group (15-45 years). It contributes to approximately 5-16% of infertility cases among women of reproductive age. However, the true incidence of genital tuberculosis is likely under-reported due to its asymptomatic presentation and limited diagnostic investigations.[5] Infertility (45-55%), pelvic pain (50%), poor general health (25%), and menstrual disturbances (20%) are major presenting symptoms of genital tuberculosis. Tuberculosis should be considered as a possible cause in reproductive age women who present with menorrhagia, post-coital bleeding, an unhealthy cervix, lower

abdominal pain, or growth over the cervix.[6] The pelvic organs can become infected from a primary focus, such as pulmonary tuberculosis, via hematogenous spread. Lymphatic or direct spread usually affects the cervix. In rare cases, cervical tuberculosis may be caused by a primary infection, such as tuberculous epididymitis in the partner.[7]

Grossly, the cervix may appear normal or inflamed, and may resemble invasive carcinoma, both grossly and with the colposcope. In our case, the cervix was stenosed. Diagnosis is made by cervical biopsy, as one-third of cases show a negative culture. Microscopically, extensive chronic inflammation with caseating granulomas is present. Hypertrophy of the cervix or friable papillary or vegetative growth can be observed macroscopically.[8]

The efficacy and safety of treatment by antitubercular drugs should be monitored carefully. The surgical management of uterine adhesion, if present should be done to improve fertility. The post anti TB surveillance of tuberculosis of the cervix requires regular speculum inspection and biopsy, if necessary. Future fertility is poor (5%) even after treatment due to endometrial and tubal involvement at presentation and due to fibrosis after treatment.

CONCLUSION

In areas with a high incidence of tuberculosis, it is important to have a high degree of suspicion for the possibility of tuberculosis in women who exhibit an abnormal cervical appearance. This can facilitate timely intervention, appropriate treatment, and increased social awareness.

REFERENCES

1. Carter JR. Unusual presentations of genital tract tuberculosis. International J Gynecology Obstetrics. 1990;33(2):171-6.
2. Thomas J, Peter M, Srikonda Y. A rare case of TB cervix-cause of secondary amenorrhoea and primary infertility: case report. Int J Res Med Sci 2018;6:1797-9.
3. G. Angeline Grace, D. Bella Devaleenal & Mohan Natrajan. Genital tuberculosis in females. Indian J Med Res. 2017; 145(4): 425–36.
4. Hangachew BA, Araya F, Girma W. A rare case of TB cervix-cause of secondary amenorrhoea and primary infertility: case report. The Ethiopian Journal of Reproductive Health. 2019; 11(4): 48-52
5. Krishna UR, Sheth SS, Motashaw ND: Place of laparoscopy in pelvic inflammatory disease. J Obstet Gynaecol India 1979, 29:505-10.
6. Sachan R, Patel ML, Gupta P, Verma AK. Genital tuberculosis with variable presentation: a series of three cases. BMJ Case Rep Published Online: 27 Aug 2012.
7. Jaiprakash P, Pai K, Rao L. Diagnosis of tuberculous cervicitis by Papanicolaou-stained smear. Ann Saudi Med 2013 Jan-Feb;33(1):76-8.
8. Paprikar M, Biswas M, Bhattachary S, Sodhi B, Mukhopadhyay I. Tuberculosis of cervix: case report. Med J Armed Forces India 2008 Jul;64(3):297-8.