Original Article

Clinical Features and Operative Findings in Chronic Suppurative Otitis Media with Cholesteatoma

Chowdhury ARMA[1], Litu MLA[2], Alam MM[3], Islam MA[4], Abedin SAMA[5], Salam MA[6]

Abstract

The present research was conducted to observe the outcome of chronic suppurative otitis media on the basis of surgical findings. This prospective observational research was carried out in tertiary care hospital in Dhaka city and peripheral hospital outdoor patients who underwent chronic suppurative otitis media with cholesteatoma. Patients undergoing modified radical mastoidectomy. Twenty two (73.3%) cases belonged to age 16-30 years. The mean age was found 23.0±9.1 years with range from 10 to 52 years. Male female ratio was 1.5:1. Commonest presenting complaint was otorrhoea (100%) followed by hearing loss (93.3%). Chronic otitis media with cholesteatoma often describe scanty but persistant, and foul smelling otorrhoea. Half of the patients (50%) had conductive loss with 21 - 30 dB air-bone gap. Only 3(10%) patient had severe conductive loss > 41 dB AB gap. The preoperative and surgical findings can predict the patients' conductive hearing loss in chronic otitis media.

Keywords: *Chronic suppurative otitis media (CSOM), Radical mastoidectomy.*

Introduction

Chronic suppurative otitis media (CSOM) is a common disease of younger ages which may lead to fatal and other dreadful complications. Meningitis is the commonest intracranial complication of chronic suppurative otitis media followed by brain abscess. Early surgical intervention in combination with broad spectrum antibiotics provides a good outcome.[1] It is defined as chronic inflammation of the mucoperiosteal lining of the middle ear cleft lasting longer than twelve weeks.[2] Despite advances in public health and medical care CSOM is still prevalent around the world, and common in developing countries and certain high risk population in developed nations.[3,4] Chronic suppurative otitis media is defined as chronic otorrhoea (> 12 weeks) through a perforated tympanic membrane. The cycle of infection, inflammation, granulation tissues, polyp and cholesteatoma formation continues, destroying surrounding bony margins and ultimately leading to the various complications of CSOM.[5] Differentiation of cholesteatoma from non-cholesteatoma otitis media on clinical basis is difficult. A careful clinical, radiological and ear examination under microscope helps in detection of cholesteatoma in most of the cases expressed as presence of keratin debris along with pars flaccida and attic defect.[6] The middle ear cholesteatoma is a very common disease in Bangladesh and also other developing countries where conditions like poverty, overcrowding, illiteracy and poor hygiene are very common. With the availability of antibiotics, operative microscope and the microsurgical operating instruments it has become easier to successfully treat middle ear infection and cholesteatoma. The present research was aimed to observe the outcome of chronic suppurative otitis media on the basis of surgical findings.

Authors

1. Dr. Abu Reza Md. Asaduzzaman Chowdhury, Assistant Professor, Department of ENT, ZH Sikder Medical College & Hospital.
2. Dr. Mani Lal Aich Litu, Professor, Department of ENT, Sir Salimullah Medical College & Mitford Hospital.
3. Dr. Md. Mahbub Alam, Professor (CC), Department of ENT, Ad-din Women's Medical College & Hospital.
4. Dr. Md. Ashraful Islam, Assistant Professor, Department of ENT, International Medical College & Hospital.
5. Dr. Syed A. M. Asfarul Abedin, Associate Professor, Department of ENT, Brahmanbaria Medical College & Hospital.
6. Dr. M. A. Salam, Assistant Professor, Department of ENT, Khwaja Yunus Ali Medical College & Hospital.

Address of correspondence: Syed A. M. Asfarul Abedin, Associate Professor.
Email address: abedinraian4@gmail.com

Methods

The research group includes 30 patients who underwent surgical exploration of middle ear and or mastoid, for the removal of cholesteatoma. All patients had preoperative evaluation by otoscopy or EUM (examination under microscopy) and by plain X ray mastoid/CT scanning. These cases included only those suspected of chronic suppurative otitis media with cholesteatoma; and those cases who have no findings suggestive of cholesteatoma in the middle ear on examination and those diagnosed with congenital cholesteatoma were excluded from the research. This prospective observational cross sectional research was carried out in the Department of Otolaryngology and Head-Neck surgery in different private medical hospital in Dhaka city and peripheral hospital in 2018. A detailed clinical history, with otoscopic examination was performed for all these cases. Some of the cases required EUM, to know the extent of the cholesteatoma or the bony erosion. Radiological investigation consisted of both conventional plain radiography and computerized tomography. Conventional plain radiography was in the form of a lateral oblique view (Law's) of both ears. In computerized tomography, high resolution serial 3 mm thick sections were obtained in both axial and coronal planes. Taking into consideration the cost of both the radiological methods of evaluation, X-ray was more affordable and convenient for the patients. Most of these 30 patients came from a low socioeconomic status. Out of 30 cases 14 cases were done by CAT, 16 cases were done modified radical mastoidectomy. A questionnaire and a consent form were prepared, sample was selected on the basis of inclusion and exclusion criteria, questionnaire was filled with informed written consent, relevant investigations was done. After collection of data, data were edited by meticulous checking and rechecking. SPSS (statistical Package for Social Science) version 23.0 package program was used for analysis of these data.

Results

This research was based on 30 patients who underwent mastoid exploration for cholestematous ear disease during a period of three years between March 2014 to March 2016. Twenty two (73.3%) cases belonged to age 16-30 years. The mean age was found 23.0±9.1 years with range from 10 to 52 years. Eighteen (60%) patients were male and 12 (40%) female. Male female ratio was 1.5:1. Commonest presenting complaint was otorrhoea (100%) followed by hearing loss (93.3%). Chronic otitis media with cholesteatoma often describe scanty but persistent, and foul smelling otorrhoea. In this research, 5 (16.7%) of the cases were misleading and had the characteristic feature of a tubotympanic variety rather than an atticoantral type. About 8 (26.7%) patients presented with blood tinged discharge which was further supported by the otoscopic finding of granulation tissue in the middle ear. Most of the patients showed hearing impairment, while in some patients there was no severe hearing loss, which did not correlate with the surgical findings in these cases showing extensive bony erosions, but rather had increased hearing impairment following surgery. This preservation of hearing is supposedly due the cholesteatoma that bridges the gap between the functioning part of the ossicular chain and the inner ear. Three (10.0%) patients presented with earache, 2 (6.7%) patient presented with post-aural abscess and 2 (6.7%) patients with facial weakness (Table I). On microscopic examination of the diseased ear, presence of posterosuperior perforation was the commonest finding. About 9 (30%) patients showed posterosuperior perforation and 6 (20%) showed subtotal perforation, while only 4 (13.33%) patients had total perforation (Table II). In this research, in 14 patients ossicular involvement of the disease could be visualized, mostly through microscopic examination, out of which 10 patients showed absence of incus and 9 cases showed malleus erosion. However, stapes involvement could not be assessed (Table III). Bone erosion could be visualized in 12 cases of which 9 showed attic erosion and 3 showed posterior canal wall erosion (Table IV). All patients had pure conductive hearing loss, except two patients who had a mixed hearing loss. No patients showed sensorineural hearing loss or minimal conductive hearing loss. Half of the patients (50%) had conductive loss with 21 - 30 dB air-bone gap. Only 3 (10%) patient had severe conductive loss > 41 dB AB gap (Table V).

Table I Symptom distribution (n= 30)

Symptom	No. of patient	Percentage
Otorrhoea		
Profuse	08	26.7
Scanty	22	73.3
Foul smelling	25	83.3
Blood tinged	08	26.7
Earache	03	10.0
Hearing loss	28	93.3
Temporal headache	02	6.7
Facial weakness	02	6.7
Post-aural abscess	02	6.7
Vertigo	01	3.3
Tinnitus	01	3.3

Table II Distribution by ear findings (n= 30)

Perforation	No. of patient	Percentage
Total	04	13.33
Subtotal	06	20.00
Central	03	10.00
Posterosuperior	09	30.00
Anterosuperior	05	16.67
Attic	03	10.00

Table III Ossicular involvement (n= 30)

Ossicle	No. of patient	Percentage
Malleus	9	30.0
Incus	10	33.3
Stapes	0	0.0

Table IV Bone erosion (n= 30)

Bone erosion	No. of patient	Percentage
Attic	9	30.0
Posterosuperior canal wall	3	10.0

Table V Preoperative hearing loss (n= 30)

Finding	No. of patient	Percentage
Type of hearing loss		
Conductive	28	93.3
Mixed	02	6.7
A-B gap (dB)		
1-10	00	0.0
11-20	05	16.7
21-30	15	50.0
31-40	07	23.3
> 40	03	10.0

Discussion

The current research showed that 22 (73.3%) cases belonged to age 16-30 years. The mean age was found 23.0±9.1 years with range from 10 to 52 years. Eighteen (60%) patients were male and 12 (40%) were female. Male female ratio was 1.5:1. Tak and Khilnani research observed similar findings, they showed majority of the patients (70%) were in the age group of 11 to 30 years and 26 (52%) were males.[7] Khan et al. showed the mean age was 25.43+9.67 years, range 10-50 years and male to female ratio was 2:1.[1] Karimi-Yazdi et al. observed that the mean age of cases was 33.5±14 years and 54 (67.5%) of them were females.[8] In this research, the presenting clinical complaints were nonspecific. More than half 22 (73.3%) patients presented with complaints of scanty discharge. Pain is unusual with COM and indicates either a reactive external otitis or the possibility of a developing intra-temporal or intracranial complication. Only 3(10%) patients in the present research presented with complaints of pain among which 1 patient was diagnosed as brain abscess and other two as postauricular abscess, by surgical exploration and CT scan. Commonest complaints were otorrhoea (100%) followed by hearing loss 28 (93.3%), 1 (3.3%) patient who presented with vertigo and 1 (3.3%) patient who presented with tinnitus. These results are comparable to the studies done by Glasscock et al[9], and Mac Millan[10], but was not agreeable with the studies performed by Brunner et al.[11], which showed 80% of cases with hearing impairment and 70% cases with ottorhoea. In this research though, diagnosis of cholesteatoma was made in 28 (93.3%)

patients on surgical exploration with 2 false negative cases. In addition, 3 (10%) patients presented with post-aural abscess and pain. The nature of the otorrhoea is helpful in describing the specific type of COM. Profuse, intermittent, mucoid drainage is commonly noted in chronic suppurative otitis media without cholesteatoma. Malodorous otorrhea is rare in this setting. Conversely, patients with COM associated with cholesteatoma often describe scanty but persistent, purulent, and foul-smelling otorrhoea.[12] In this research, 25 (83.3%) patients presented with the characteristic foul smelling discharge, but 5 (16.7%) cases did not correlate with the surgical findings in the diagnosis of cholesteatoma. When an infected cholesteatoma is present or there is bone destruction, the purulent discharge tends to be thick, scanty and fetid.[13] This did not correlate with the findings of the studies done by Phelps and Wright[14], which suggests that there is no apparent difference in the smell associated with cholesteatoma compared with the active mucosal disease.

An occasional patient will ignore the disease until impending complications develop heralded by the onset of pain, bloody otorrhoea, vertigo, headache, facial paresis, or the appearance of a polyp at the meatus. Blood-stained discharge is often noted with granulation tissue or polyps and was presented by 8 (26.7%) patients, which were supported by the presence of granulation tissue with or without cholesteatoma on otoscopic examination and all these cases correlates well with surgical findings. 93.3% of the patients had complaints of hearing impairment in which majority, 15 patients, showed air bone gap between 21-30 dB. Twenty eight patients had conductive hearing loss and 2 had mixed hearing loss. 23.3% of hearing loss was of mild degree with 31-40 dB A-B gap, Glasscock et al had similar results in their series of 41 children.[9]

Conclusion

The preoperative and surgical findings can predict the patient's conductive hearing loss in CSOM. In present research, half of the patients had conductive loss with 21-30 dB AB gap and 10% patients had severe conductive loss more than 41 dB AB gap.

References

1. Khan A, Khan MI, Muhammad. Intracranial complications of chronic suppurative otitis media: clinical presentation and outcome of surgical procedures. Gomal J Med Sci 2012; 10: 186-9.

2. Khemani A, Akhund AA, Shakh AB. Bacteriology and its effects on clinical presentation and treatmentresults of chronic suppurative otitis media (CSOM). Med Channel 1999; 5(1): 35-8.

3. Nissen AJ, Louisuille S, Bui HK, Brea D. Complications of chronic otitis media. ENT J 1999; 12: 284-92.

4. Bluestone CD. Epidemiology and pathogenesis of chronic suppurative otitis media: Implications for prevention and treatment. Int J paediatr Otorhinolaryngol 1998; 3: 207-23.

5. Slattery WH. Pathology and clinical course of inflammatory diseases of the middle ear. In: Glasscock ME, Gulya AJ, editors. Glasscock-Shambaugh surgery of the ear. 5th ed. Ontario: BC Decker Inc 2003: 422-33.

6. Khan AU, Khan Q, Ahmed N, Ullah I, Khan MF. Clinical Findings and Diagnosis of Cholesteatoma. PJMHS, 2013; 7 (4): 1184-1189.

7. Tak J and Khilnani AK. Role of high resolution computed tomography of temporal bone in management of chronic suppurative otitis media. Int J Otorhinolaryngol Head Neck Surg. 2016 Oct; 2(4): 193-196.

8. Karimi-Yazdi A, Saedi B, Fayezizadeh M, Seifmanesh H. Association between Audiometric Profile and Intraoperative Findings in Patients with Chronic Suppurative Otitis Media. Iranian Journal of Otorhinolaryngology 2011: 23 (63): 37-42.

9. Glasscock ME, Dickins JRE, Welt R. Cholesteatoma in children. Laryngoscope 1981; 91: 1743-1753.

10. Mac Millian AS: radiologic diagnosis of Neuro-otologic problems by conventional radiology. Arch Otolaryngol 1969; 89:78-82.

11. Brunner S, Peterson O, Sandberg LE. Tomography in cholesteatoma of the temporal bone. Correlation between the standard roentgenographic examinations and tomography. AJR 1966; 97: 588-596.

12. Bluestone Charles D, Klein JO. Intracranial complications and sequelae of Otitis media. In: Bluestone CD eds. Paediatric Otolaryngology. WB Saunders, Philadelphia, 1990. 2nd ed: Vol 1. 738-740.

13. Coel MN, Godwin D. Simplified plain film screening examination for erosive otitis media. AJR 1979; 133.

14. Phelps PD, Wright A. Imaging cholesteatoma. Clin Radiol 1990; 41: 156-162.