Pathological Profile in Chronic Suppurative Otitis Media - The Regional Experience

Pages with reference to book, From 235 To 237

Iqbal H. Udaipurwala, M. Jalisi (Department of Otorhinolaryngology and Cervico-facial Surgery, Dow Medical College and Civil Hospital, Karachi.)
Khalid Iqbal, Ghulam Saqulain (Department of Otorhinolaryngology and Cervico-facial Surgery , Dow Medical College and Civil Hospital Karachi.)

Abstract

Peroperative findings in 145 consecutive cases of chronic suppurative otitis media, operated at Civil Hospital, Karachi were recorded. The mean age was 24 years. More than half of the patients (51%) kid subtotal perforations and majority had damage of more than one ossicle. Involvement of all the three ossicles was seen in 30(40%) cases. The frequency of damaged malleus along with incus was higher than other series. Granulations and subtotal perforations were commoner and could account for it. Extensive cholesteatoma was present in 30 cases (JPMA 44: 235, 1994).

Introduction

Suppurative disease of the middle ear is the prime cause responsible for middle ear and mastoid pathologies in our region. Besides local tissue changes, it results in a wide spectrum of tympanic membrane and ossicular defects. Cholesteatoma and granulation tissue formation are the principal pathologies. This study reports peroperative findings in middle ear and mastoid in 145 consecutive cases of chronic suppurativeotitis media. The aim was to determine the pattern of middle ear and mastoid pathologies in our region and thus to highlight the behaviour of the disease in this perspective.

Patients and Methods

Over a period of two and a half years (between July, 1991 and December, 1993) 145 cases of chronic suppurative otitis media were operated at Civil Hospital Karachi. The operative procedures included tympanoplasty alone in 30 and tympanomastoidectomy using both canal wall up and canal wall down techniques in 115 cases. Meatoplasty was performed in all the canal wall down mastoidectomies. The pathological findings in the middle ear and mastoid were recorded. None of the case in this series was operated on both the ears.

Results

Of 145 cases included in this study, 81 were males and 64 females. Their ages ranged from 9 to 57 years (mean 24 years) as shown in Table I.

Table I. Age group distribution.

Age in Years.	No.	Percent (%)
<10	3	2.0
11-20	59	40.7
21-30	54	37.2
31-40	16	11.1
41-50	12	8.3
>51	1	0.7
Total	145	100

The types of perforations encountered were 140 perforations in the pars tensa and 5 in pars flaccida (Table II).

Table II. Pattern of Perforations.

Pattern	No.	Percentage
Small Central	6	4
Anterior Central	31	21
Posterior Marginal	18	12
Inferior Central	3	2
Posterior Central	8	6
Subtotal Perforation	74	51
Attic Perforation	5	4

Subtotal perforations, the commonest type, were seen in 74 cases. Attic and posterior marginal perforations were mostly associated with the cholesteato main this series. Ossicular damages were present in 76 cases while 69 had no ossicular pathology (Table III).

Table III. Pattern of Ossicular Pathology.

	No.	(%)
Handle of Malleus	12	8.3
Handle of Malleus + Long process incus	10	6.9
Malleus+Incus+Stapes suprastruct.	30	20.7
Long Process of Incus	8	5.5
Head of Malleus	2	1.3
Malleus + Incus	12	8.3
Fixed Incudeo-Malleolar Joint	1	0.7
Fixed Incus and Stapes	1	0.7
Total	145	100

Involvement of all three ossicleswaspresentin30 out of 76 (40%) cases. Isolated incudal involvement was seen in 8 (6%) while malleus was solely implicated in 14 (10%) cases. Patients with posterior perforations had more pronounced ossicular damage as compared to anterior ones.

Table IV. Pathology in Middle Ear and Mastoid.

Granulation tissues	91
Adhesions in middle ear	10
Cholesteatoma	30
Polyps	9
Tympanosclerosis	2
Exposed dura mater	6
Destruct of bridge and post metal wall	4
Fistula in Lat. Semi circular canal	3
Facial palsy	3
Mucosal cyst	1

Table IV shows the pathologies in the middle ear and mastoid. Granulation tissue was present in 91 cases. Cholesteatoma was seen in 30 cases. Most of the cholesteatomas, were extensive involving both middle ear and mastoid (Table V).

Table V. Sites of cholesteatoma.

Attic	5
Attic + Antrum	5
Tympanic Cavity	4
Attic + Antrum + Tympanic Cavity	12
Entire Mastoid + Tympanic Cavity	4
Total	30

There was no significant difference in the extent of cholesteatoma in patients of younger or older age group. The old classification of chronic suppurative otitis media into benign and malignant types lacks scientific support[1]. Whether tubotympanic or atticoantral, the middle ear suppuration is fraught with dangerous extracranial and intracranial complications. The same holds true for the presence or otherwise of cholesteatoma. If suppuration is allowed to continue unabated, besides ossicular destruction a number of sequelae such as persistent perforation, adhesive otitis media and tympano sclerosis may ensue.

Discussion

Subtotal perforations were the commonest type recorded in our series. These may be due to aggressive and recurrent middle ear disease due to inadequate and improper medical therapy, lack of awareness about aural hygiene and unavoidable delays in scheduling surgery. Some of the perforations had only a small remnant of tympanic membrane and can be called total perforation. There were problems of graft uptake in these cases probably due to inadequate vascularization and epithelialization. The differentiation into central and marginal perforation is still widely used in clinical practice but it has no real impact on modem to surgery and is of no use for pathogenetic considerations[2]. The fibrous annulus is thinner posteriorly, thus the posterior perforations are often close to the bony annulus and may imitate a marginal perforation. Ossicular defects are caused by the resorption of bone and are more pronounced in chronic otitis media with granulation whether they are associated wiiheholesteatoma or otherwise. There is definite correlation between the ossicular defects and perforation in the tympanic membrane[3]. Subtotal perforations are associated with defective handle of malleus and long process of incus while the posterior perforation mostly involves the long process of incus. In Austin's series[4], the most common ossicular defect was absence of long process of incus (59.2%), followed by loss of incus and suprastmcture of stapes (23.2%) and necrosis of incus, suprastructure of stapes and malleus (8.2%). A similar incidence of ossicular defects has been noted by others[5]. The frequent involvement of long process of incus and stapes suprastmcture could be attributable due to their delicate structure[6] and tenuous blood supply[5]. The stapedial footplate is very resistant and remains intact even when the entire middle ear is involved. In majority of eases in this series there was involvement of more than one ossicle, indicating an aggressive disease pattern. Involvement of all the three ossicles was present in 30 (40%) cases out of 76. Isolated involvement of malleus showed a higher figure (10%) as compared to other series. This deviation can be explained on the basis of more subtotal perforation that we encountered. Malleus, because of its anatomical incorporation with tympanic membrane is more

vulnerable to be damaged with it. Other series show cholesteatoma as the prime pathological factor which preferentially destroys incus. In our series granulation tissue was more pronounced as compared to cholesteatoma and this is another reason that malleolar destruction is more frequently encountered. Isolated involvement of the long process of incus is very low (6%). Cholesteatoma has the property of bone erosion. A number of theories have been propounded explaining the mechanism of bone erosion by cholesteatoma like pressure, bacterial, enzymatic, hyperaemic, chemical and immunological theories[7]. Site of cholesteatoma has an influence on the pattem of ossicular damage[8,9]. Attic and cantral cholesteatoma leads to damage of head of malleus and body of incus while the cholesteatoma in tympanic cavity leads to damage of long process of incus. Previous studies on cholesteatoma in pediatric age group have reported inconsistent statistics. Some authors rerrt that eholesteatorna is more aggressive in childhood[10-12] while others propose pediatric cholesteatonia has fewer complications[13-15]. In this series age factor did not influence the nature of cholesteatoma. Tympanosclerosis is the end result of inflammatory process inthetympanic cavity and is a rare finding inactive ear disease[16]. We had only two cases of tympanosclerosis as most of our patients had aggressive and active middle ear disease. The pathological pattern in chronic suppurative otitis media is featured by aggressive disease with subtotal perforations and multiossicular damage. Malleus was markedly affected along-with incus. Granulation tissue exhibits their impact equivocally with cholesteatoma.

References

1. Jalisi, M. Middle ear reconstruction, techniques and results In: Current problems in oto-rhino-laryngology. Jalias, M. and Jarbi, B. (eds.). Doctor publications, Karachi, Pakistan, 1991;P. 111.
2. los, M. Relationship between secretory otitis in childhood snd chronic otitis in adults. Laryngol.Otol., 1981;95:1011-13.
3. los, M. Tympanomastoiditis: management and treatment In: Otologic medicine and surgery, volume 2. AlbertA, P.W. and Rubern, R.J. (eds.) New York, Churchill Livingatone, 1988;P.1213,
4. Austin, D.F. lhe significance of the retrsctionpocket in the treatment of cholesteatoma. Proceedings of the first international conference on cholestestoma, Birmingham, Alabama, Aesculapius Publishing Co, 1977;PP.379-83.
5. Wehrs, RE. Ossicutar reconstruction in ears with cholesteatoma. Otolaryngol. Clin. NorthAsn., 1989;22:1003-1013.
6. Thomsen, J., Jorgensen, MB., Bretlaw, P. et al. Bone resorption in chronic otitis media. Laryngol. Otol., 1974;88:975-92.
7. Kacker, BK. Cholesteatoma causes, complications andireatment In: Current problems in oto-rhino-laryngology. Jalisi, M. and Jasbi, B. (eda.). Doctor Publicaons, Karachi, Pakistan, 1991 ;PP. 102.
8. los, M. Pathology of ossicular chaistin various chronic middle ear disease. Laryngol. Otol., 1979,93:769-60.
9. Shenoy, A.M. and Kacker, BK. Middle sar choleaseatomain children An Indian perspective J. Lacyngol. Otol., 1986;100:515-19.
10. Vartisnen, S., Kasja, J. and Kasjalainen, S. Surgery of chronic othismrdia in young patients. J. Laryngol. Otol., 1986;100:515-19.
11. Palva, A., Pekka, K. and Karja, J. Cholesteatoma in children. Arch. Otalaryngology, l977;103:74-77.
12. Glasscoclç ME., Dickins, J.R.E. and Wset, R. Cholcsteatoma in children. Laryngoscopr, 1981;91:1743-53.
13. los, M. Treatment of cholestratoma in children. A long term study of results., Am.J.Otol. 1983;4: 189-97.
14. Sheehy, J.L. Cholestestosna surgeryin children. Am. J. Otol., 1985;6: 170-172.

15. Edelstein, DL, Parisier, S.C. andAhuja, G.S. Choteaseatomainthe pediatric agegro&sp. Ann. Otol. Rhinol. Laryngol., 1988;97:23-29.
16. Gristwood, RE. and Venable, W.N. Cholcatcatoma and tympano- sclerosis. Proceedings of the second intemational corsference on cholssteasoma and maatoid surgery. Amsterdam, Kugler, 1962;pp.132-37.