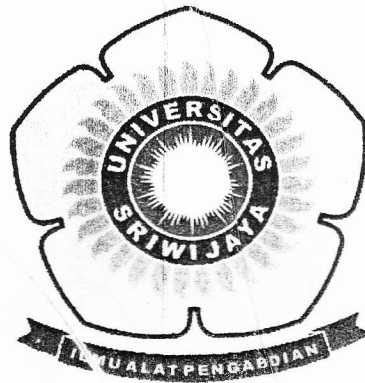


Research

**EPIDEMIOLOGY, PREOPERATIVE EVALUATIONS
AND SURGICAL FINDINGS IN CSOM**



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ABSTRACT

Background and Purpose: Prevalence of CSOM in developing countries is still high, as well as the complications such as deafness or even death. Early and proper therapy is needed in order to prevent complications. The aim of our study is to report the cases of CSOM with or without cholesteatoma in our hospital including age, sex, preoperative evaluations and types of mastoid surgery.

Study design: A retrospective descriptive study

Subjects and Methods: Eighty four patients with CSOM from January 2008 to September 2010 in Mohammad Hoesin Public Hospital at South Sumatera were enrolled. Epidemiology data were taken from the subject consists of age and sex. Type of hearing loss and radiologic findings were noted as preoperative evaluations. Surgery was performed in all of patients using CWD or CWU and tympanoplasty methods. Intraoperative findings was noted.

Result: Subject were 50 (59,5%) males and 34 (40,5%) females, between 2 and 59 years old, with mean age 16-30 years old (48,8%). Data from audiometry found 50 (59,5%) patients with mixed hearing loss, 11 (13,1%) patients with sensorineural hearing loss and 23 (27,4%) patients with conductive hearing loss, with variative degree. All of patients was performed mastoid x-ray and only 31 (36,9 %) patients was performed CT-Scan. Cholesteatoma was found in 62 (73,8%) CSOM patients. Sixty one (72,6%) cases were treated by CWD, 13 (15,5%) cases treated by CWU and 10 (11,9%) cases treated by tympanoplasty.

Conclusion: CSOM can be found in all decade of life and common in male. There were variative degree of hearing loss in association with cholesteatoma. The combinations of audiogram, mastoid x-ray or CT scan and surgical findings help us to decide types mastoid surgery.

Keyword: CSOM, preoperative evaluations, surgery methods

INTRODUCTION

Chronic suppurative otitis media (CSOM) is a disease well known and the most widely available in developing countries.¹ In Indonesia, patient with CSOM enough to find and is one of the areas of ENT chronic infection that is still often cause deafness or complications and sometimes cause death. Based on an epidemiological survey in 7 provinces in Indonesia in 1994-1996, overall prevalence was found to be 3.8%, as much as 25% of patients seeking treatment at the ENT clinic of the hospital in Indonesia is CSOM patients.^{2,3} Medical record from 2008 to 2009 in Mohammad Hoesin Public Hospital at South Sumatera were number of people with ear infections reached 7424 people with CSOM and the number of patients who come to the outpatient clinic of ENT are as many as 1288 people.⁴

In the beginning with the Acute otitis media that doesn't heal with conservative treatment then continued with chronic otorrhoea of more than 2 weeks and persisten tympanic membrane perforation.^{5,6} In cases of malignant chronic suppurative otitis media cholesteatoma.⁵ Often found the existence of a broad cholesteatoma not only affect anatomy and the auditory system but also lead to intracranial complications even death.⁸ With the era of antibiotics and surgical therapy reduce these risks.^{8,9}

The main purpose of operative therapy in chronic suppurative otitis media is to eradicate the disease, save the function of hearing and if possible to maintain the normal structure of the ear. Surgical technique Canal Wall Down (CWD) and Canal Wall Up (CWU) is a therapeutic option of CSOM with cholesteatoma.^{10,11}

This study purpose reporting cases of chronic suppurative otitis media with or without cholesteatoma in Mohammad Hoesin Public Hospital at South Sumatera, including age profile, gender, pre-operative evaluation, operative therapy and intraoperative findings.

MATERIALS AND METHODS

This is a retrospective study. Data taken from patients with chronic suppurative otitis media subjects that has been carried out operations from January 2008 until September 2010 at Dr. Mohammad Hoesin Palembang. The data of patients consist of age, gender, type of hearing loss obtained by using audiometric pure tone audiogram, either plain mastoid radiography imaging and / or computer tomography, a type of surgery and intra-operative findings.

RESULTS

From January 2008 to September 2010 recorded 84 patients with CSOM that had done the surgery. Age of patients varied in which the youngest is 6 years old and the oldest 59 years with most aged 16-30 years, or approximately 48.8% (Table 1). Based on gender, the number of male patients (59.5%) more than women (40.5%) patients. (Table 2).

Table 1. Distribution of age groups

Age groups	Total
1-15	20
16-30	41
31-45	17
46-50	6

Table.2 Distributions of gender

Male	50
Female	34
Total	84

Preoperative findings data in patients with the most is the presence of fistulae retroaurikula as many as 34 patients and then the granulation tissue and sagging on 10 patients and other findings in diagram 1.

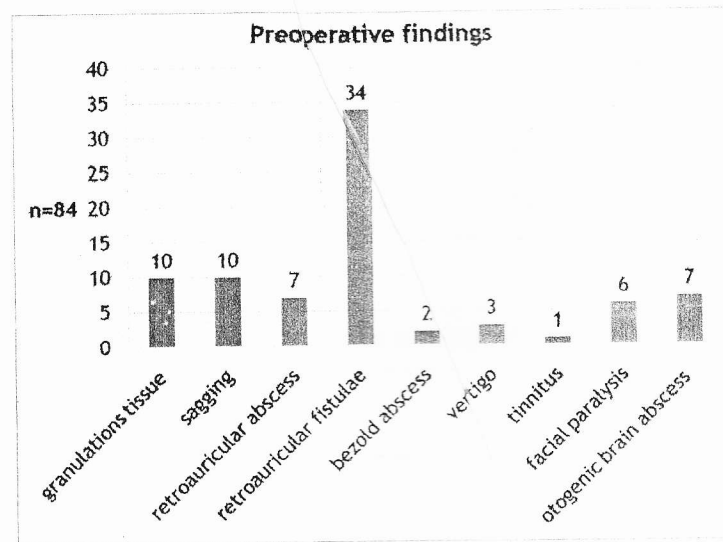


Diagram 1. Preoperatif finding

Data taken from preoperative audiometric examination, it was found that most of the type of hearing loss that is then mixed hearing loss (59.5%) conductive hearing loss (27.4%) and sensorineural hearing loss (13.1%). All patients with CSOM made plain mastoid Schuller position and just as many as 31 (36.9%) patients performed an additional examination with Computer Tomography.

Table 3. The Distribution based on hearing loss type

Types of hearing loss	mild	moderate	Moderately severe	severe	Profound	total
Conductive hearing loss	8	12	1	2	-	23
Sensorineural hearing loss	-	3	-	8	-	11
Mixed hearing loss	1	17	5	17	10	50
Total	9	32	6	27	10	n =84

Table 4. The Distribution based on radiological examinations

Radiological examinations	Total
Mastoid X-ray	84
Mastoid- CT	31

Table 5 describes the intraoperative findings, the presence or absence cholesteatoma in patients operated on. Of the 84 patients operated on are found as many as 62 (73.8%) patients with kolesteatom and the remaining 22 (25.2%) patients without cholesteatoma. Table 6 describing the presence or absence kolesteatom based on the degree of deafness, conductive deafness where in only 4 patients with cholesteatoma, whereas in nerve deafness and deaf to intervene almost always found the cholesteatoma.

Table 5. The Distributions based on the presence or absence cholesteatoma

Cholesteatoma	Total (n=84)	%
Presence	62	73,8
Absence	22	26,2

In Table 6 shows the type of surgery performed in 84 patients. A total of 61 (72.6%) patients treated with surgery Canal Wall Down, 13 (15.5%) patients with CWU surgery and 10 (11.9%) patients carried tympanoplasti only. Table 7 shows the distribution of types of deafness to the type of operations performed.

Table 6. Type of surgery

Type of surgery	Total (n=84)	%
<i>Canal Wall Down</i> (CWD)	61	72,6
<i>Canal Wall Up</i> (CWU)	13	15,5
Tymphanoplasty	10	11,9

Table 7. Hearing loss distribution with surgery type

	CWD	CWU	T
Conductive hearing loss	10	3	10
Sensorineural hearing loss	10	1	-
Mixed hearing loss	41	9	-

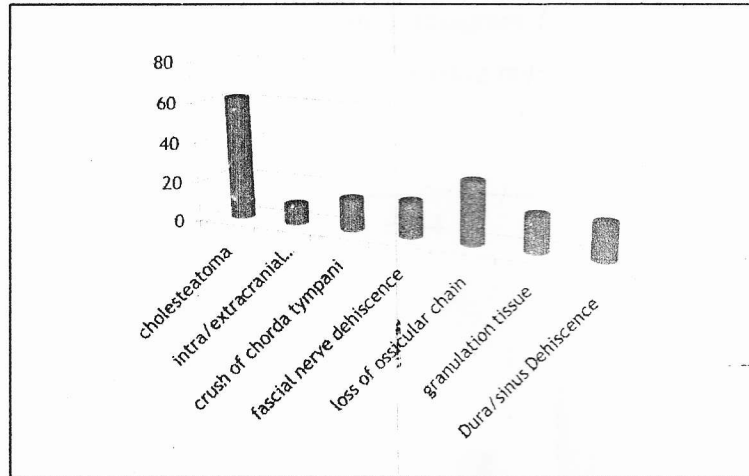


Diagram 2. Intraoperatiffinding

Intraoperatif findings are shown in diagram 2. Cholesteatoma found in the most intraoperatif that is about 62 cases then followed by the loss of enchaining the hearing bone, granulation tissue, exposure of dura or sigmoid sinus, exposure offacial nerve, chorda tympani damage and intra/extracranial complication.

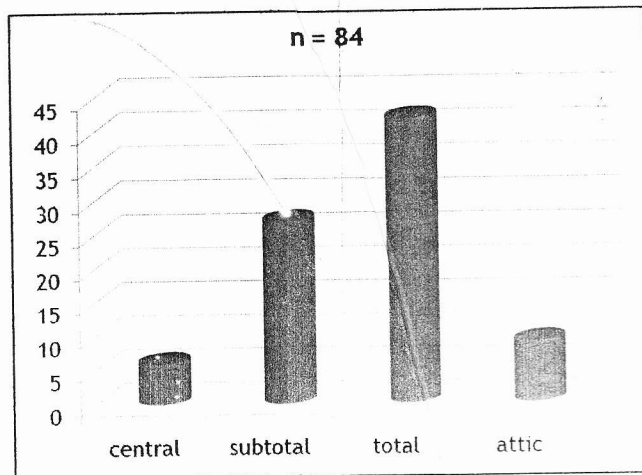
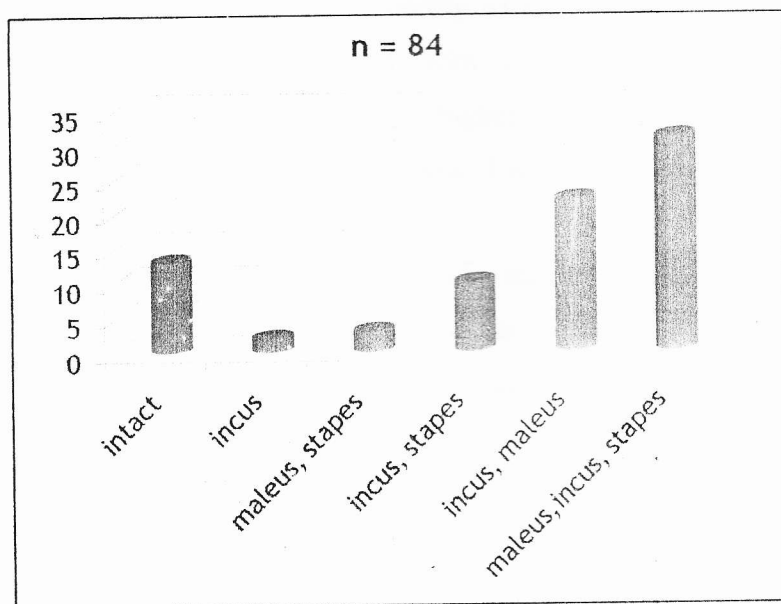


Diagram 3. Type of tympanic membrane perforation

Type of tympanic membrane perforation pursuant to the sequence at most is total perforation, subtotal, attic and central. (diagram 3). Diagram 4 shows the damage type of hearing bone. 30 patient with no hearing bone again and 12 patient with still good hearing bone.



DISCUSSION

CSOM patient which have been conducted surgery in RSMH Palembang in range of time of 2 year are 84 case. Tables 1 and 2, CSOM can be suffered by all of age groups which most of them are 16-30 year and man are more than woman. Garap and Dubey in his research for 6 year (1992-1997) state that this disease can be found at all age , with man frequency (n=33, 58%) patient) more than woman (n=24, 42%). Prahlada (1995) & Nikakhlagh (1999) also found that CSOM more at man. Other research also show ratio man more than woman.

The most group of age is 16- 30 year (tables of 1). This is appropriate with Musthaque research (2000) that he find CSOM the most at 10-30 years old age group (50%). In Indonesia according to Survei Kesehatan Indera Penglihatan and Pendengaran, Depkes year of 1993-1996 CSOM prevalence is 3,1% population which the most is 7-18 years old.

The result of audiogram this 84 patient vary, start light conductive hearing loss to severe mixed hearing loss, is such as showed at Table 3. This can assist in approximating damage that happened at each patient ear which at patient with mild-moderate conductive hearing loss possibility of damage only limited to tympanic membrane or limited to tympanic cavity with air aeration in tympanic cavity and good mastoid pneumatisation system. At higher type and degree of hearing loss mastoid pneumatisation isn't good which related with the patologic-condition, one of which is the existence of cholesteatoma.

Cholesteatoma is cyst or poke formed by abnormal accumulation of squamous epithelium keratinisation process in middle ear, epitimpanum, mastoid or apex petrosus. Histologically cholesteatoma is not dangerous but have the character of aggressive and invasive so that it can cause morbidity and even mortality. Patogenesis of cholesteatoma till now is still controversy. Some theories that often been discussed is pressure theory, granulation tissue theory and enzymatic destruction theory. One of cholesteatoma complication is hearing loss. When erosion hit processus lenticularis and or superstructure from stapes will cause conductive hearing

loss as high as 50dB. But hearing trouble will vary along cholesteatoma migration to stapes or its footplate. Sensorineural hearing loss existence show involvement of labyrinth which in 10% CSOM patient will formed labyrinth fistule effect from cholesteaoma. Table 4 shows the existence of cholesteatoma at intraoperatif investigation that is 62 (72,6%) patient and table 5 shows the distribution of cholesteatoma with hearing loss degree which suffer by the patient.

Surgery type for the patient at this research determined from preoperatif investigation (one of them is the degree of hearing loss) as well as intraoperatif investigation. This research, patient with mild conductive hearing loss only done tympanoplasty while patient with more severe hearing conducted CWU and CWD, as shown at table 6 and 7. CWU technique indication is patient with good mastoid pneumatisation, good middle ear airation and estimation of good tuba function also, cholesteatoma have entangled the hearing bone and mastoid cavity, posterior wall bone destruction is not reaching the half of it and possibility of recurrence. CWD technique indication is wide cholesteatoma, cholesteatoma only exist at the hearing ear, history of vertigo (suspect of labyrinth fistule), recurrence of cholesteatoma afterCWU, and the sclerotic mastoid.

CONCLUSION

CSOM can occur at any age and mostly found in man than woman. Degree of hearing loss in CSOM vary depends on the disease severity degree related to with or without cholesteatoma. Hearing loss and intraoperatif investigation can assist in founding the surgery technique that will be done.

REFERENCES

1. Ajalloueyan M. Experience With Surgical Management of Cholesteatomas. Arch Otolaryngol Head and Neck Surg 2006;132:931-33.
2. Suwento R. Epidemiologi Penyakit THT di 7 Provinsi. Dalam: Ronny Suwento, Semiramis Z, Bullantrisna P. (eds). Kumpulan Makalah dan Pedoman Kesehatan Telinga. Lokakarya THT Komunitas, Palembang, 29 Juli 2001:8-16.
3. Arsan M dkk. Hubungan Luas Perforasi Membran Timpani dan Lama Menderita OMSK Terhadap Derajat Ketulian. ORLI 2006;36:31-36.
4. Data Kunjungan Pasien di Poliklinik Rawat Jalan THT RSMH Palembang Tahun 2006.
5. Djaafar Z. Kelainan Telinga Tengah. Dalam: Buku Ajar Ilmu Kesehatan Telinga Hidung Tenggorok. Edisi Keempat, Balai Penerbit FKUI. Jakarta, 2000:50-57.
6. Mills R.P. Management of Chronic Suppurative Otitis Media. In: Scott Brown's Otolaryngology. 6th ed, Butterworth-heinemann Reed Educational and Professional Publishing Ltd, Oxford, 1997:3/10/1-8.
7. Parry D. Middle Ear, Chronic Suppuratif Otitis, Medical Treatment. e Medicine, Last Updated April 18, 2002.
8. Greenberg J.S, Manolidis S. High Incidence of Complications Encountered in Chronic Otitis Media Surgery in A U.S. Metropolitan Public Hospital. Otolaryngology Head and Neck Surgery 2001;125:623-27.
9. Keles E et al. Bacteriemia During Mastoidectomy and/or Tympanoplasty. Otolaryngology Head and Neck Surgery 2005; 133:347-51.
10. Santana C.D, Lee S.C. Ceravital Reconstruction of Canal Wall Down Mastoidectomy. Arch Otolaryngol Head and Neck Surg 2006;132:617-23.

11. Hakuba N et al. Labyrinthine Fistula as a Late Complication of Middle Ear Surgery Using the Canal Wall Down Technique. *Otology & Neurotology* 2002;23:832-35.
12. Garap J.P, Dubey S. P. Canal-Down Mastoidectomy: Experience in 81 Cases. *Otology & Neurotology* 2001;22:451-56.
13. Ruhl C.M, Pensak M.L. Role of Aerating Mastoidectomy in Noncholesteatomatous Chronic Otitis Media. *The Laryngoscope* 1999;109:1924-27.
14. Mehta R.P et al. Determinants of Hearing Loss in Perforations of the Tympanic Membrane. *Otology & Neurotology* 2006;27:136-143.
15. Underbink M. Cholesteatoma. In: Quinn F.B, Ryan M.W. (eds). Grand Round s Presentation, UTMB, Dept. of Otolaryngology, September 18, 2002.
16. Lin J.C et al. Incidence of Dehiscence of the Facial Nerve at Surgery for Middle Ear Cholesteatoma. *Otolaryngology Head and Neck Surgery* 2004;131:452-56.
17. Selesnick S.H, Macrae A.G.L. The Incidence of Facial Nerve Dehiscence at Surgery for Cholesteatoma. *Otology & Neurotology* 2001;22:129-132.
18. Hinohira Y et al. Improvements to Staged Canal Wall Up Tympanoplasty for Middle Ear Cholesteatoma. *Otolaryngology Head and Neck Surgery* 2007;137:93-17.
19. Hulka G. F, McElveen J.T. A Randomized, Blinded Study of Canal Wall Up Versus Canal Wall Down Mastoidectomy Determining the Differences in Viewing Middle Ear Anatomy and Pathology. *The American Journal of Otology* 1998;19:574-578.
20. Dornhoffer J.L. Retrograde Mastoidectomy with Canal Wall Reconstruction: A Follow -up Report. *Otology & Neurotology* 2004;25:653-660.