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Study of Profile of Otitis Media: A Study from Maharashtra, India

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A B S T R A C T

Otitis media is inflammation of the middle ear by pyogenic organisms. Typically disease follows viral infection of upper respiratory tract, but soon invades the middle ear with pyogenic organisms; seen as acute and chronic forms based on clinical grounds (Froom *et al*., 1997). Acute suppurative otitis media (ASOM) is termed as the rapid and short onset of signs and symptoms of inflammation in the middle ear. Chronic suppurative otitis media (CSOM) is termed as long standing infection of a part or whole of the middle ear cleft characterized by ear discharge and a permanent perforation (Freid *et al*., 1998). For secondary brain abscess (Berman, 1995). Present study was carried in Department of Microbiology during the period September 2006 to August 2008 at Government College and Hospital, Ambajogai. A total of 504 clinically diagnosed cases of otitis media were included in study in the present study. The commonest age group affected in ASOM was 0-10 years (73cases, 43.71%) and in CSOM was 11-20 years, (95 cases, and 56.88%). Both ASOM and CSOM cases showed male predominance, 56.88% and 57.27% respectively. In all cases the commonest presenting symptom was otorrhoea, followed by deafness and fever. Otitis media is common ENT problem in children and young adults, Males are commonly affected in both ASOM & CSOM- these findings is consistent with other studies in literature.

Introduction

Hippocrates (460 to 375 B.C.) was apparently the first to describe acute otitis media. He wrote, "Acute pain of the ear, with continued strong fever is to be dreaded for there is danger that the man may become delirious and die" (Dhingra, 2007). Boies (1959), suggested that chronic suppurative otitis media is continuous suppuration from middle ear, following an acute necrotic otitis media or a primary suppuration in middle ear with hyperplastic or fibrotic mucosa: uncommonly it occurs following an invagination of epithelium from shrapnell's membrane or metaplastic changes in middle ear mucosa to form cholesteatoma without pre-existing perforation, or ordinary otitis media in a previously normal middle ear (Bhargava *et al*., 1994).

Otitis media is inflammation of the middle ear by pyogenic organisms. Typically

disease follows viral infection of upper respiratory tract, but soon invades the middle ear with pyogenic organisms; seen as acute and chronic forms based on clinical grounds (Froom *et al*., 1997). Acute suppurative otitis media (ASOM) is termed as the rapid and short onset of signs and symptoms of inflammation in the middle ear. It generally affects younger age group, with signs: otalgia, otorrhoea, fever, etc. Common organisms responsible for it are: Streptococcus pneumoniae, Haemophilus influenzae, Branhamella catarrhalis, Streptococcus-Gp A, Staphylococcus aureus, etc (Berman, 1995).

Chronic suppurative otitis media (CSOM) is termed as long standing infection of a part or whole of the middle ear cleft characterized by ear discharge and a permanent perforation (Freid *et al*., 1998). CSOM has complex aetiology, spares no age, with symptoms like otorrhoea, deafness, etc. Aerobic organisms such as *Pseudomonas aeruginosa*, *Haemophilus influenzae*, *Proteus*, *Staphylococcus aureus* and anaerobic organisms mainly *Bacteroides melaninogenicus*, *Bacteroides fragilis* are the offending aetiological agents (Scott and Brown, 1997). Anaerobic infections are responsible for secondary brain abscess.

Materials and Methods

Present study was carried in Department of Microbiology during the period September 2006 to August 2008 at Government College and Hospital, Ambajogai. A total of 504 clinically diagnosed cases of otitis media were included in study in the present study. A pretested pro-forma was filled in each case noting particulars in each case. Criteria for selection: 1) Patients with ear discharge from acute as well as chronic otitis media with or without complications were selected. 2) Indoor as well as outdoor patients with discharging ears were taken from the Department of E.N.T. 3) Patients had not received treatment for at least seven days prior to taking the samples.

Detailed history of all patients was taken which included age, sex, socioeconomic conditions, predisposing factors, signs and symptoms, duration of illness, antibiotic treatment if any, immunocompromised status, history of diabetes.

Table.1 Distribution of cases of otitis media

Year	Author	ASOM	%	CSOM	%	Total
1976	Baruah *et al*	13	11.20%	103	88.79%	116
2008	Present study	167	33.13%	337	66.86%	504

Results and Discussion

The present study shows 167 (33.13%) cases of ASOM and 337 (66.87%) cases of CSOM (Table.1a). Friedman (1957), studied cases of otitis media over 6 yrs duration and found more acute cases (2241) than chronic cases (1750). Gupta Vineeta *et al*., (1998) studied cases of otitis media and found acute on chronic otitis media cases 17.20% and CSOM cases 56.69%.

In present study, CSOM cases are common than ASOM cases. Teele *et al.*, (2007) predicted that, if otitis media with effusion persisted for weeks to months after onset of acute otitis media, recurrent episodes of ASOM occurred, landing in chronic cases. This may be the reason for increasing incidence of CSOM, as also found in present study.

Pattern of otitis media cases in present study: According to Baruah *et al.*, (1972) 84% were Unilateral & 16% Bilateral, according to Gupta *et al.*, 83.44%% were Unilateral & 16.67% Bilateral. Present study is in correlation with above studies. In our study, there are in all 427 (84.72%) unilateral cases and 77(15.27%) bilateral cases.

ASOM cases: Out of the 167 cases of ASOM, 155 (93%) are unilateral and 12 (7%) are bilateral (Table.2). Our study is in accordance with following studies- Fairbanks *et al.*, Celin *et al.*, Ruohola *et al.*, Our study is in accordance with above studies, except Ruohola *et al.*, who found 39% bilateral cases and predicted that in bilateral otitis media (39%), disparate (various) findings were common.

CSOM cases: Out of 337 cases of CSOM, 272.In present study 80.71% cases show discharge from single ear and 19.28% showed bilateral ear discharge, this is consistent findings of Laxmipathi *et al.*, Brook *et al.*, Sriwardhan *et al.*, (1989) Fliss *et al.*, (1989).

Age and sex wise distribution of ASOM:Age : In ASOM, maximum incidence is seen in 0-10 yrs age group (73 cases, 43.71%). This is consistent with following studies- Teele *et al.*, (2007) Pichichero *et al.*, (2004).

Sex: - Acute otitis media cases are more in males 95(56.88%) and less in females 72(43.11%) (Table.3,4). Teele *et al.*, studied 2565 Boston children, and found that males had significantly more single and recurrent (3 or more) episodes of otitis media. The total number of acute cases of otitis media was 136 of which females were more than males i.e. 81 females (59.6%) and 55 males (40.4%). The total numbers of chronic cases were 64, there were 30 females (46.9%) and 34 males (53.1%). In most studies the incidence of acute episodes of otitis media was not significantly different in boys and girls, as also seen by Celin. Pichichero (2004) predicted that children aged 7 to 24 months were most likely to develop AOM, predominantly in males.

Table.1(a) Distribution of cases of Otitis media

Diagnosis	No. of cases	Percentage
Acute Suppurative Otitis Media (ASOM)	167	33.13%
Chronic Suppurative Otitis Media (CSOM)	337	66.86%
Total No. of cases	504	100

The above table shows the distribution of cases of otitis media. A total 504 patients are studied, out of which 167 cases are of acute otitis media (ASOM) and 337 cases are of chronic otitis media (CSOM).The number of CSOM cases are seen to be more than the ASOM cases.

Table.2 Distribution of samples of otitis media:

Diagnosis	Patients	Samples
ASOM	167	179
CSOM	337	402
Total	504	581

The table shows the distribution of ASOM and CSOM cases from the total cases of otitis media. Bilateral ear discharge is present in 12 cases out of the 167 cases of ASOM and in 65 cases out of the 337 cases of CSOM. The total unilateral cases are 427 (84.72%) and bilateral cases are 77 (15.27%). Hence the total numbers of samples taken from 504 patients are 581.

Table.3 Age and Sex wise Distribution of ASOM

Age group(yrs)	Male	Female	Total	%
0-10	40	33	73	(43.71%)
11-20	26	19	45	(26.94%)
21-30	19	13	32	(19.16%)
31-40	6	5	11	(6.59%)
41-50	2	1	3	(1.80%)
51-60	1	1	2	(1.20%)
61-70	1	0	1	(0.60%)
> 71	0	0	0	(0%)
Total	95 (56.88%)	72 (43.11%)	167	

Of the 167 patients studied, maximum cases are in the 0-10 years age group (73 cases,43.71%), followed by 11-20 years (45 cases,26.94%), 21-30 years (32 cases,19.16%) ,31-40 years (11 cases,6.59%),41-50 years(3 cases,1.80%),51-60 years(2 cases,1.20%) and 61-7years (1case,0.60%). From the above table we can see that the incidence of ASOM shows a decline as the age increases.
The ASOM cases show male predominance (95 cases, 56.88%).

Table.4 Age and Sex wise Distribution of CSOM

Age group(yrs)	Male	Female	Total	%
0-10	23	21	44	13.05%
11-20	69	52	121	35.90%
21-30	55	42	97	28.78 %
31-40	27	20	47	13.95 %
41-50	14	8	22	6.52%
51-60	2	1	3	0.89 %
61-70	2	0	2	0.59 %
> 71	1	0	1	0.29 %
Total	193 (57.27%)	144 (42.73%)	337	100

Out of the 337 patients of CSOM , maximum number of cases are in the 11-20 yrs age group, (121 cases,35.90%), followed by age group 21-30 yrs(97 cases,28.78%), 31-40yrs,(47 cases,13.95%), followed by 0-10 yrs (44 cases,13.05%).Decrease in the incidence is seen from 41 years onwards. The males are more (193 cases, 57.27%) than females (144 cases, 42.73%).

Table.5 Clinical presentation of cases:

Symptoms	ASOM cases	CSOM Cases	Total cases	%(n=504)
Otorrhoea	165	330	495	98.21%
Deafness	143	244	387	76.79%
Fever	151	198	349	69.24%
Earache	90	76	166	32.93%
Vertigo & Tinnitus	24	101	125	24.80%
Repeated URTI	89	69	158	31.34%

The above table shows the incidence of clinical presentation of the cases of otitis media. The clinical presentation shows variation in presentation in ASOM and CSOM. The commonest symptom is otorrhoea, present in 98.21% of the cases, followed by deafness, present in 76.79% of the cases and fever, present in 69.24% of the cases. Earache, vertigo &tinnitus and repeated upper respiratory tract infections are seen in less number of cases.

Age and sex distribution of csom: Age: Out of the 337 cases of CSOM, the incidence is more in the 11-20 yrs age group (35.9%). Taneja *et al.*, (1954) Gulati *et al.*, (1997) also found maximum incidence of CSOM in the 11-20 yrs age group.

Sex: The CSOM cases are more in males 193 (57.27%), than females 144 (42.73%). Different studies showing same age affection: Present study is in accordance with following studies Baruah *et al.*, (1997).

The clinical presentation: Present study shows otorrhoea as the most common symptom (98.21%), followed by deafness (76%), earache and vertigo (Table.5). These findings are similar to study by Hussain *et al.*, (1991) Gulati *et al*., (1997) 76.79% patients show partial to complete deafness of conductive type. Deafness did not occur at once but when the patient had infection for some duration. The following is the comparison of deafness in various studies: Lower incidence was seen in study of Rao Laxmipathi *et al.*, 16.26% - 18.63%, Hussain *et al.*, (1991) 7%. Jokipii AMM *et al.*, (1977) observed that hearing loss and chronic otitis media were both higher among Alaskan Eskimos.

In conclusion total 581 swabs were taken from 504 cases, comprising of 179 swabs of ASOM and 402 swabs of CSOM. The commonest age group affected in ASOM was 0-10 years and in CSOM was 11-20 years, Both ASOM and CSOM cases showed male predominance. In all cases the commonest presenting symptom was otorrhoea, followed by deafness and fever.

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