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Study of Various Microorganisms Isolated from Chronic Supperative Otitis Media among Indian Population

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Abstract: ***A total 201 discharge from ear (pus) were collected from various patients. The study was carried out in patients and out patients in the hospital. This study was undertaken to isolate different microorganism from chronic supperative otitis media. The present study showed, the commonest clinical isolate was P.aeruginosa (52%), followed Staphylococcus aureus (40%), E.coli (6%), Proteus(2%) and fungal isolate Aspergillus Niger (4%) separately .The sex ratio was found to be male were 56% and female were 44%. It often starts in infancy and is among top five illness in childhood. Infection generally results from fungal and bacterial causes and in some cases from other viral infections like Upper respiratory tract infections and tuberculosis. Among the bacteria responsible for CSOM. Pseudomonas aeruginosa has been particularly responsible for deep-seated and progressive destruction of middle ear and mastoid structures.***

Keywords: CSOM, otitis media, pseudomonas aeruginosa, staphylococcus aureus, ear discharge

1. Introduction

Chronic suppurative otitis media (CSOM) is chronic inflammation of the middle ear cleft (Eustachian tube, middle ear, and mastoid cavity) which presents with recurrent ear discharge or otorrhoea through a tympanic perforation for two weeks or more.[(1)]

CSOM commonly occurs during the first 6 years of a child's life, with a peak around 2 years[(2)].The ultimate fate of the tympanic perforation is still largely undocumented. Although healing is often observed over prolonged periods, there are more patients who develop either recurrent bouts of Otorrhoea (active CSOM) or a dry but permanent tympanic perforation (inactive CSOM)[(3)]. Regarding management of chronic suppurative otitis media both medical and surgical therapies have same goal that is to achieve a safe ear, eradicate disease, achieve a dry ear free of otorrhoea, avoidance of surgery, stabilize or improve hearing and to prevent future complications[(4)]. A bacteriological study of CSOM with Pseudomonas aeruginosa as the prime pathogen (Chandrashekhar MR, 2004).[(5)]

Risk factors of otitis media include young age, overcrowding, inadequate housing, poor hygiene, lack of breast feeding, poor nutrition, exposure to cigarette, high rates of nasopharyngeal colonization with potentially pathogenic bacteia and poverty. Supperative otitis media often starts in infancy and is among top five common illness in childhood. Infection generally results from fungal and bacterial causes and viral infection like upper respiratory tract infections and tuberculosis. The predominant aerobes are gram negative rods Pseudomonas and gram positive cocci Staphylococcus aureus. [(6)]

It affects 84% of children by the age of 3 years[(7)]. It begins in childhood as spontaneous tympanic perforation due to an acute infection of middle ear known as Acute Otitis media. Generally patients with tympanic perforations continue to discharge mucoid material of period from 6weeks to 3 months, despite medical treatment. For managing the CSOM there should be management of alliance with the patient against CSOM. Some preventive measures are:

1) Adequate identification and management of acute otitis media.
2) Control risk factors-smoking cessation, breast feeding, proper nutrition, proper hygiene, allergy treatment.
3) Screening programmes for hearing loss and for middle ear effusions.
4) Immunization against serious respiratory tract infections which would predispose to otitis media.

2. Aims & objective

The present study is undertaken to study microbiological effects of CSOM by various microorganisms in NIMS hospital.

3. Material and Methods

This study is carried out in department of Microbiology in NIMS Medical college & Hospital, Jaipur. A total of 201 discharge from ear (pus) are collected consecutively. The study is carried out by using (Kirby-Bauer Method) to determine the antimicrobial susceptibility of various isolates from in-patients and out-patients in hospital. Clinical specimen used for the study are ear (pus) swabs. Information including age, sex and type of isolates are recorded.) All the isolates are identified using colony morphology on Blood agar, MacConkey agar, Nutrient agar, Sabaroud dextrose agar, KOH mount, Gram staining characteristics, motility detection and all biochemical reactions including oxidase, indole, citrate, urease and Triple sugar iron test done.

4. Results

A total of 201 discharge from ear (pus) swabs were collected consecutively from male and female patients. One hundred and twelve patients (56%) were Males and Eighty nine patients (44%) were Females. Out of the total 201 samples, the commenest isolate was *Pseudomonas aureginosa*,

followed by various other microorganisms like *Staphylococcus aureus*, *E. Coli*, *Proteus* and *Aspergillus Niger*.

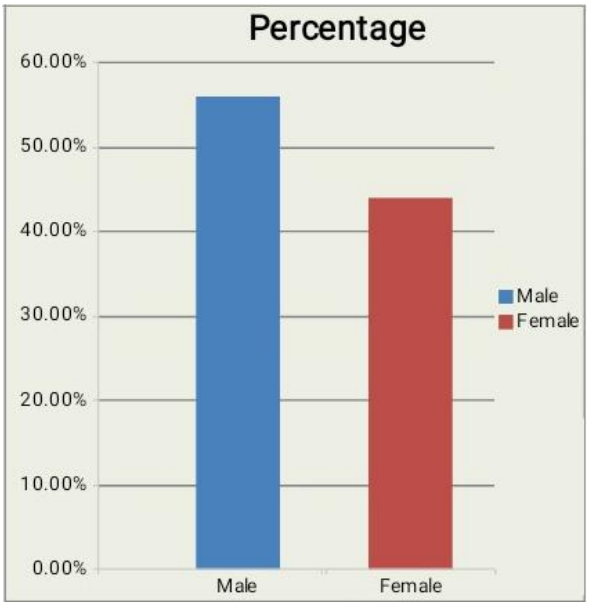

Figure 9: Male and Female ratio in chronic supperative otitis media

Table 1: Male and Female ratio in CSOM

Sex	Total no. of patients	percentage
Male	112	56%
Female	89	44%
Total	201	100%

Above table shows that higher ratio of males 112 (56%) were infected as compared to females 89 (44%).

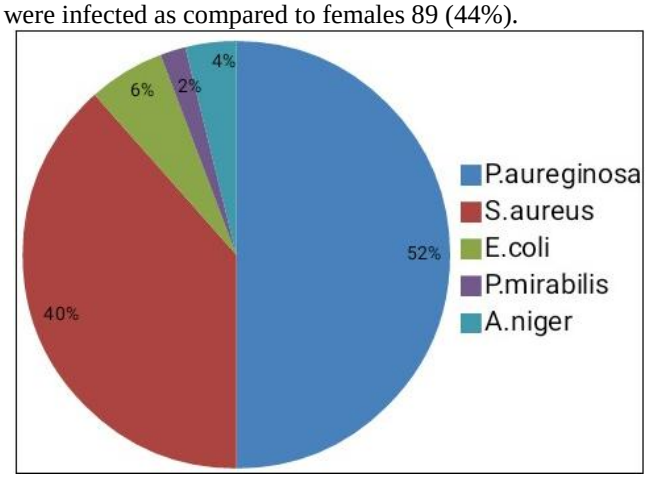

Figure 10: The microbial profile of Chronic supperative otitis media

Table 2: Microbial profile of CSOM

Serial no.	*Organism*	*n=201 (%)*
1	P. aureginosa	52%
2	S.Aureus	40%
3	E.coli	6%
4	P.mirabilis	2%
5	A.niger	4%

Out of 201 total no. of cases, *Pseudomonas aureginosa* was found to be the most common isolate was Pseudomonas aureginosa 105 (52%), followed by *Staphylococcus aureus* 81 (40%), *E.coli* 12 (6%), *Proteus mirabilis* 3 (2%) and fungal isolate *Aspergillus Niger* 2 (4%) seperately.

5. Discussion

This study was conducted to find out the microbiological etiology of CSOM. In this study, the commonest clinical isolate was *P. aeruginosa* (52%), *Staphylococcus aureus* (40%),*E.coli*(6%),*Proteus*(2%) and *Aspergillus Niger*(4%).Similar findings were reported by Shamin Rahman et. al. and Favour Osazuswa et. al. Oyeleke S. B. also reported higher prevalence of Pseudomonas sp. in their study[8]. In other study by Bello et. al. *Staphylococcus aureus* was reported to be the commonest isolate[9]. However the incidence of Aspergillosis was reported by P.Talwar et. al.[10] In this study the prevalence of CSOM was more common in males (56%) as compared to females(44%).This is in comparison with findings of Rao and Reddy et. al.[11] , Oguntibeju et. al.[12] and Gulati et.al.[13] while, in other findings by Shreshtha et. al. higher incidence (55.2%) of infection was found in females.[10]

6. Conclusion

Chronic otitis media is a major health problem in population around world and a significant cause of morbidity and mortality. It is common in developing countries. Thus, our study conclude that Pseudomonas aureginosa to the most causative agent of CSOM followed by Staphylococcus aureus and E.coli. The bacteria responsible for otitis media are pathogenic, therefore effort should be made to reduce the factors militating its occurence of these pathogens in the community.

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