Microbial Profile of Chronic Otitis Media in Patients of a Tertiary Care Hospital of North Central M.P

Authors

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Aim
This study aim to determine commonest microorganism of chronic suppurative otitis media and their antibacterial susceptibility(1) as in chronic otitis media Bacterial infection is often a causes of exacerbation in the clinical course and failure in the treatment. The aim of the study was to determine the incidence and profile of the aerobic bacterial flora in chronic otitis media and to determine the drug susceptibility of isolated bacteria(2).

Material and Method
A total of 75 patients with unilateral or bilateral active chronic suppurative otitis media attending the OPD Clinic of ENT Dept. from August 2018 to January 2019 were included in the study. All patients were evaluated through detailed history and clinical examination was also done. Patients (males 65, 10 females; mean age 20 - 40 years). Pus sample were collected from the discharging ear(s) with the help of sterile swabs and sent to the hospital laboratory where culture sensitivity studies were done to determine the microbiological profile(3).

Results
This study was conducted for 6 months from August 2018 to January 2019. Total 75 samples were studied. Among them, 29 (38.66%) were pure culture and 2 (2.66%) were mixed. Staphylococcus aurerus 16 (21%) was the most common isolate, followed by Pseudomonas aeruginosa 13 (17%) and other isolated microorganisms 5 (6.66%) which included Acinetobacter 2 (2.66%), CONS 2 (2.66%) and Streptococcus pyogenes 1 (1.33%). Drug sensitivity pattern of Staphylococcus aureus showed that Linezolid was active against majority 93.75%, of isolates followed by Vancomycin 81%, Teicoplanin 75%, Tetracycline and Doxycyclin hydrochloride 68%. Pseudomonas aeruginosa was sensitive to Amikacin 100% and Ceftazidime 92%, Meropenem 77% whereas resistant to Imipenem, Ticarcillin, Clavulanic acid, Tobramicin, Piperacillin, tazobactam in 41% cases(3).

Discussion
1. CSOM is described as a condition of middle ear that is characterized by persistent or recurrent discharge through a permanent perforation of the
tympanic membrane of the middle ear\(^{(4)}\). Infection can spread from middle ear to vital structures such as leading to mastoid abscess, facial nerve paralysis, deafness, lateral sinus thrombosis, meningitis, and intracranial abscess. With the incidence being very low, they need to be borne in the mind when faced by a patient with active CSOM\(^{(5)}\). Off all the complications, hearing loss associated with chronic ear discharge is nearly always reported in 50% of cases and tending to be more severe than those reported in other types of otitis media\(^{(6)}\). Early bacteriological diagnosis of all cases helps in appropriate and effective therapy and proper selection of antibiotics\(^{(5)}\).

2. The culture of pus from ear discharge is affected by patient population, climate, and recent use of antibiotics\(^{(7)}\).

3. High prevalence of CSOM in this study was in the age of 20-40 years 16 (51.61%) followed by age of 0-19 years 6 (19.35%) unlike our study high incidence of CSOM was found in the age group of 6-10 yrs in studies of Patigaroo et al\(^{(7)}\), Saini et al\(^{(8)}\) and Nazir and Kadri\(^{(6)}\). This may be attributed to late reporting of problem after it becomes chronic, due to lack of knowledge and reluctance to come to hospital in rural population\(^{(6)}\).

4. These days, it is somewhat rare for ENT surgeon, to see ear with discharge that have not already had the bacterial flora modified due to prior antibiotic treatment, since most patients attend the hospital very late when pus cultures are rendered sterile and hence not of any value. This may be attributed to the resistance of the bacteria to these antibiotics there by suggesting their failure, leading to continuous purulent discharge from the ear\(^{(9)}\).

5. In this study gender distribution revealed that CSOM was found more common in male 65 (86.66%) than in female 10 (13.33%) consistent with study done by Patigaroo et al\(^{(7)}\). And Moshi et al\(^{(10)}\). While a study by Nazir and Kadri\(^{(6)}\), Moshi et al\(^{(10)}\) and Loy et al\(^{(11)}\) showed a higher incidence in female population as compared to males.

6. In our study 38.66% were pure growth and 2.66% were mixed growth and 40% samples had no growth. Unlike our results , there are studies by Malkappa et al\(^{(4)}\), Patigaroo et al\(^{(7)}\); and Sharma et al\(^{(9)}\) where incidence of sterile growth was least and incidence of pure growth had shown the highest trends.

7. In study done by us S. aureus (21%) is most common causative agent and P.aeruginosa (17%) being the 2\(^{nd}\) common cause for CSOM. Similarly the study done by Poorey VK and Lyer A\(^{(12)}\). S. aureus (40.52%) is most common organism and Pseudomonas aeruginosa (36.7%), being 2\(^{nd}\). Unlike our study, in studies of Fliss et al\(^{(12)}\), Maji et al\(^{(13)}\), Malkappa et al\(^{(4)}\) and Indudharan et al\(^{(14)}\). P. aeruginosa was the most common organism followed by S.aureus.

8. In our study S. aureus was mainly sensitive to linezolid (93.75%), vancomycin (81%), teicoplanin (75%), tetracycline and doxycycline hydrochloride 68% and resistant to norfloxacin. Like our study, study done by Patigaroo et al\(^{(7)}\) all MRSA isolates sensitive to linozolid, vancomycin, tetracycline and doxycycline.

Pseudomonas in our study showed maximum sensitivity to amikacin 100%, and ceftazidime 92% and resistant to imipenem, ticarcillin 41%. Similar results are found in study done by Patigaroo et al\(^{(7)}\) where Pseudomonas spp. were sensitive to amikacin 87% while resistant to linozolid, vancomycin. In a study done by Loy et al.,\(^{(11)}\) P.aeruginosa was sensitive to ceftazidine piperacillin and amikacin.

9. Unlike our study, study done by Nazir and kadri\(^{(6)}\) the most effective antibiotic against P.aeruginosa was amikacin (92.30%), followed by piperacillin (79.48%), imipenem. this finding was corroborated by study of numerous other author including Mansoor et al\(^{(15)}\).

**Conclusion**

Commonest organisms isolated from chronic discharging ears were Staphylococcus aureus and Pseudomonas aeruginosa. Majority of isolates of Staphylococcus aureus were sensitive to Linezolid.
and resistant to Norfloxacim. Majority of strains of Pseudomonas aeruginosa were sensitive to Amikacin and resistant to Imipenem and Ciprofloxacinc. Proper knowledge of antibacterial susceptibility of microorganisms will contribute to appropriate and rational antibiotic usage and the successful treatment of chronic suppurative otitis media.

References
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