Chronic Suppurative Otitis Media - Empiric Quinolones in Adults

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Research Article

Abstract: **Objective:** The aim of the study was to determine the most prevalent organisms in chronic otitis media in adults and their susceptibility to various antimicrobials so that an appropriate empiric antibiotic can be started promptly while awaiting the results of the culture and sensitivity. **Design**: Prospective observational study. **Place and Duration of Study:** NIMS hospital, from July 2011 to July 2012. **Subject and Methods:** A total of 156 patients more than 15 years of age who were having discharge from one or both ears for at least 1 week with tympanic membrane perforation were included in the study. A sample of the ear discharge was collected on the swab and cultured on appropriate media. Out of 156 patients, 96(61.5%) were males and 60(38.9%) were females. The organisms isolated were *Staphylococcus aureus* in 79(50.6%), *Pseudomonas aeruginosa* in 45 (28.8%) patients and *Proteus mirabilis* 17 (10.9%), *Escherichia coli, Acinetobacter sp and streptococci* 14(9.03%) patients. *Staphylococcus aureus* was the commonest organism isolated followed by *Pseudomonas aeruginosa* and *Proteus mirabilis* .54(34.6%) of *Staphylococcus aureus* were sensitive to gentamicin, 52(33.3%) to ciprofloxacin and 42 (26.9%) to both ciprofloxacin and gentarnicin. Among the Pseudomonas aeruginosa isolates 40 (25.6%) were sensitive to gentanicin, 27(17.3%) to ciprofloxacin and 22 (14.1%) to both ciprofloxacin and gentarnicin. Out of 155 patients 93(60%) had isolates which were sensitive to ciprofloxacin and 62(40%) were resistant to it, 114 patients (73.1%) had isolates which were sensitive to gentamicin whereas 33(27%) were resistant. Similarly 35 isolates (22.4%) were sensitive to sulphamethoxazole/ trimethoprim whereas 66(42.3%) were resistant. Among Proteus mirabilis isolates 12 were sensitive to gentamicin, 11 were sensitive to ciprofloxacin and 11 were sensitive to both ciprofloxacin and gentamicin. **Conclusion**: Ciprofloxacin can be recommended to be given empirically in adults with chronic discharging ears.

Key words: CSOM, discharge, ciplox.

Introduction

Prevalence surveys, which vary widely in disease definition, sampling methods, and methodological quality, show that the global burden of illness from CSOM involves 65–330 million individuals with draining ears, 60% of whom (39–200 million) suffer from significant hearing impairment. CSOM accounts for 28 000 deaths and a disease burden of over 2 million daily. Over 90% of the burden is borne by countries in the South-east Asia and Western Pacific regions, Africa, and several ethnic minorities in the Pacific rim. CSOM is uncommon in the America, Europe, the Middle East, and Australia. In order to avoid serious complication an active and prompt approach in management of CSOM is mandatory. However in order to start appropriate therapy according to causative organism and its sensitivity to various antibiotics we have to wait for 48-72 hrs for the culture and sensitivities report. Delaying the therapy for 2 to 3 days may further aggravate symptoms of the patient or may contribute to long term complications. Despite being so common there are still many questions and controversies concerning the best treatment option for chronic ear infections. The aim of the study was to determine most prevalent organisms in chronic otitis media in our setup their sensitivity to various antimicrobials so that an appropriate therapy can be started promptly while awaiting the results of the culture and sensitivity of the isolate to various antibiotics. Once the result of the culture is available the antibiotics being given to the patient may be modified if required.

Material and Methods

This prospective study was conducted at NIMS hospital, Jaipur from July 2011 to July 2012. A total of 156 patients more than 15 years of age who were having discharge from one or both ears for at least 1 week with tympanic membrane perforation were included in the study. A sample of the ear discharge was collected on the swab and cultured on appropriate media.

Exclusion Criteria

Current febrile illness, current antibiotic use, allergy to otological medications and specific allergy to fluoroquinolones, recent ear surgery, congenital ear or hearing problems.

Method

An informed consent was obtained from the patient. A sample of the ear discharge was collected on the swab before starting the antibiotics and cultured on Mac Conckey agar and blood agar and incubated aerobically at 37 degree C for 24-48 hrs. Gram positive organisms were identified on the basis of colony morphology, Gram staining, catalase and slide/tube coagulase test.

The Gram negative organisms were identified by oxidase test and API 20e (Biomerieux, France). The sensitivity of the various antibiotics was tested by Kirby Bauer and Laboratory Standards Institute (CLSI) guidelines using commercially available antimicrobial disks.

Observations

- Out of 156 patients, 96(61.5%) were males and 60(38.9%) were females. Male to female ratio was 1.6:1. The mean age was 32.05 yrs. The age of the patients ranged in between 15yrs to 65 yrs. The discharge was present in both ears in 70 patients(44.87%) whereas it was unilateral in 86 patients (55.1%). (Figure-1)

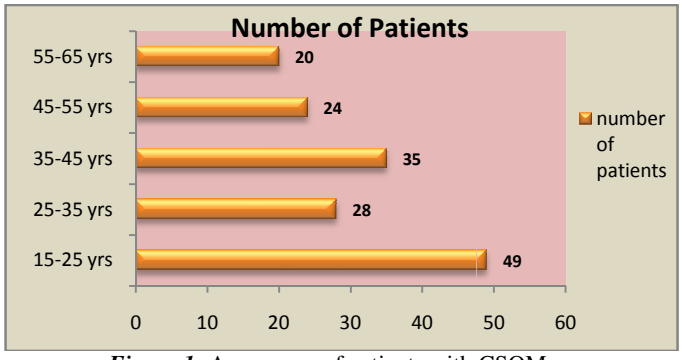

Figure 1: Age ranges of patients with CSOM

- The organisms isolated were *Staphylococcus aureus* in 79(50.6%), *Pseudomonas aeruginosa* in 45 (28.8%) patients and *Proteus mirabilis* 17 (10.9%), *Escherichia coli, Acinetobacter sp and streptococci* were isolated in occasional patients. *Staphylococcus aureus* was the commonest organism isolated followed by *Pseudomonas aeruginosa* and *Proteus*.(Figure-2)

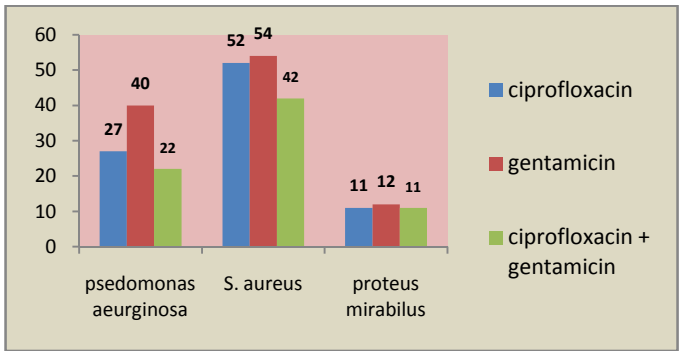

Figure 2: Sensitivity pattern of micro-organisms isolated from patients with CSOM.

Fifty four (34.6%) of Staphylococcus aureus isolates were sensitive to gentamicin, 52 (33.3%) were sensitive to ciprofloxacin and 42 (26.9%) to both ciprofloxacin and gentamicin. Among Pseudomonas aeruginosa 40(25.6%) were sensitive to gentamicin 27(17.3%) to ciprofloxacin and 22(14.1%) to both ciprofloxacin and gentamicin. Out of 156 isolates 93 isolates (59.6%) were sensitive to ciprofloxacin and 63 (40.3%) of isolates were resistant to it. 114 (73.1%) of our patients had isolates which were sensitive to gentamicin whereas 33 (27%) were resistant. Similarly 35 isolates (22.4%) were sensitive to co-trimoxazole whereas 66(42.3%) were resistant. Sensitivity of Pseudomonas aeruginosa to co-trimoxazole was not tested because of the genetic resistance of the organism to this antibiotic. Among Proteus mirabilis isolates 12 were sensitive to gentamicin, 11 were sensitive to ciprofloxacin and 11 were sensitive to both ciprofloxacin and gentamicin. Other antibiotics for which the sensitivity of Pseudomonas aeruginosa was tested were ceftazidime and cefoperazone/sulbactam to which all the isolates were sensitive.(Figure-3)

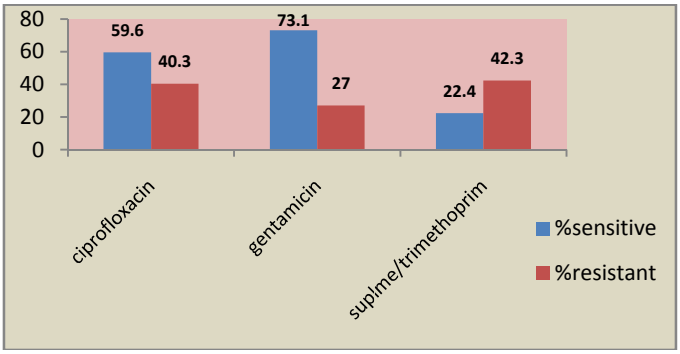

Figure 3: Sensitivity pattern of isolates in patients with chronic suppurative otitis media (n=156)

Discussion

- The result of our study shows that Staphylococcus aureus is the commonest organism isolated in chronic suppurative otitis media (CSOM) followed by Pseudomonas aeruginosa and then Proteus mirabilis. The same organisms are reported to be the predominant organisms isolated in CSOM in previous studies. Despite being a common ear ailment the treatment given to the patient differs within our hospitals as well as by the general practitioners. However generally quinolone have been found to be effective for the treatment of acute and chronic middle ear infections.
- Previously amoxicillin or ampicillin were used for acute and chronic middle ear infections in our set up keeping in view the low cost of the antibiotics as compared to quinolones. In our study more than 50% of our isolates were pseudomonas aeroginosa which are genetically resistant to ampicillin or amoxicillin so these penicillins are not the treatment of choice for the patients with these isolates. Moreover most of our other isolates (staphylococcus aureus, proteus

mirabilis etc) were resistant to these penicillins .hence ampicillin or amoxicillin are not given empirically in our patients with CSOM.

- As compared to these penicillins ciprofloxacin seems more suitable to be given empirically in our patient keeping in view the higher degree of sensitivity of our isolates to this antibiotic. Dohar et al have also found the use of ciprofloxacin superior to amoxicillin in otitis media.

Conclusion

Keeping in view the high prevalence of Staphylococcus aureus and Pseudomonas aerouginosa in our set up and their high degree of susceptibility to quinolone, ciprofloxacillin can safely be recommended to be given empirically in adults with chronic discharging ears. The initial therapy can be modified and appropriate therapy started if the result of the culture and sensitivity report shows the isolate to be resistant to the quinolone started empirically.

References

1. Dohar J. Giles W, Roland P, Bikhari N, Cartroll S, Moe R.\ ciprofloxacin/dexamethasone superior than amoxicillin/clavulanic acid in acute otitis media through tympanostomy tubes.
2. Ahmed A, Usman J, Hashim R. Isolates from chronic suppurative otitis media and their antimicrobial sensitivity. Pak Armed Forces Med J. Dec 1994; 49(2):82-5.
3. World Health Organization. Chronic suppurative otitis
4. Media: Burden of illness and management options. Geneva, Switzerland: World Health Organization; 2004. Browning GG. Aetiopathology of inflammatory conditions of the external and internal ear. Scott-Brown's otolaryngology.
5. Scott-Brown's otorhinolaryngology, head and neck surgery, 7th edition, Edited by Micheal Gleeson.

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