EVALUATION OF ANTIBIOTIC SENSITIVITY PATTERN IN CHRONIC OTITIS MEDIA

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Abstract
Background: Chronic otitis media (COM) is defined as chronic inflammation of middle ear and mastoid cavity that may present with recurrent ear discharges or otorrhoea through a tympanic perforation.
Methods: A prospective cross sectional analysis was performed using antibiotic susceptibility test.
Results: Antibiotic resistance was seen in case of the commonly used antibiotics like ampicillin, amoxicillin, Amoxicillin+Clavulanic acid. Cephalosporins were less commonly used antibiotics and showed resistance in 40.00% cases. Cotrimoxazole showed about 50.00% resistant cases. The less commonly used antibiotic was vancomycin however, showed high sensitivity (100%) followed by Linezolid (92.00%).
Conclusion: Antibiotic sensitivity has been changing over time with high levels of resistance to commonly used antibiotics.
Keywords: Antibiotic sensitivity, Chronic otitis media, Ear discharge

Introduction:
Chronic otitis media (COM) is defined as chronic inflammation of middle ear and mastoid cavity that may present with recurrent ear discharges or otorrhoea through a tympanic perforation.¹ COM is prevalent worldwide maximally affecting the developing or underdeveloped countries especially in areas of poor socio-economic standards owing to factors such as malnutrition, overcrowding and poor hygiene.² Due to its recurrent nature and the development of resistant pathogenic organisms, control of infection in COM now poses a greatest therapeutic challenge. Often, the primary care physicians, who first see these patients, rely on empirical antibiotic therapy. Irrational and unethical use of antibiotics has led to high resistance patterns and increase in burden of the disease and its complications. This has been confirmed by various studies which have brought out the changes in bacterial flora and their resistance patterns in COM in the last decade.³,⁴

METHODS
Place of study: ENT Department
Type of study: Prospective cross sectional observational study
Inclusion criteria -All cases of CSOM both mucosal and squamous, who reported to the ENT OPD were included in the study. Only samples growing aerobic bacterial organisms were included in the study.
Exclusion criteria- Cases exhibited antibiotic either systemic or topical in the ear in last 2 weeks or patients who had clinical evidence of otomycosis, otitis externa, and or acute otitis media.

Sample collection - Cotton tipped swab was taken from each patient and sent for antibiotic sensitivity pattern. All care was taken to avoid surface contamination and the swabs were taken to the microbiology laboratory for further bacteriological processing. Non bacterial flora such as fungi and anaerobic organisms were not included in the present study.

Table 1: Resistance and sensitivity observed against various antibiotics.

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Resistance</th>
<th>Sensitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methicillin</td>
<td>70.00%</td>
<td>30.00%</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>16.00%</td>
<td>84.00%</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>0.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>74.00%</td>
<td>26.00%</td>
</tr>
<tr>
<td>Cotrimoxazole</td>
<td>50.00%</td>
<td>50.00%</td>
</tr>
<tr>
<td>Linezolid</td>
<td>8.00%</td>
<td>92.00%</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>70.00%</td>
<td>30.00%</td>
</tr>
<tr>
<td>Amoxycillin</td>
<td>72.00%</td>
<td>28.00%</td>
</tr>
<tr>
<td>Amoxicillin+clavulanate</td>
<td>90.00%</td>
<td>10.00%</td>
</tr>
<tr>
<td>Amikacin</td>
<td>20.00%</td>
<td>80.00%</td>
</tr>
<tr>
<td>Cephalexin</td>
<td>40.00%</td>
<td>60.00%</td>
</tr>
<tr>
<td>Cefotaxime</td>
<td>28.00%</td>
<td>72.00%</td>
</tr>
</tbody>
</table>

Antibiotic resistance was seen in case of the commonly used antibiotics like ampicillin, amoxicillin, Amoxicillin+Clavulanic acid. Cephalosporins were less commonly used antibiotics and showed resistance in 40.00% cases. Cotrimoxazole showed about 50.00% resistant cases. The less commonly used antibiotic was vancomycin however, showed high sensitivity (100%) followed by Linezolid (92.00%).

DISCUSSION

World Health Organization has listed antibiotic resistance as a growing global problem which poses a major threat to health. Higher incidence of CSOM is common in cases due to the malnutrition, overcrowding and poor hygiene and hence is more commonly seen to occur in communities from poor socio-economic standards. Both gram positive and gram negative organisms contribute to the bacteriological profile of CSOM infection.

Proper antibiotic profile is essential for timely treatment as also to reduce the menace of antibiotic resistance. This study was therefore undertaken to define the resistance pattern to commonly administered antibiotics in cases of CSOM.

Based on the antibiogram, there was high resistance to Ampicillin, Amoxicillin/Clavulanic acid and Trimethoprim/ Sulphamethoxazole combinations across complete spectrum of bacterial isolates. It showed high resistance...
pattern to Ampicillin, Amoxycillin/Clauvalinic acid and Trimethoprim/ Sulphamethoxazole and also a high resistance to Aminogylcosides. This is in variance with other studies such as Prakash et al who showed good response of Amikacin to Pseudomonas. This shows development of increase in resistance patterns of the organism maybe as a result of rampant misuse of these antibiotics over time. The mechanism of resistance is believed to be mediated by formation of biofilms by this organisms.

CONCLUSION

Antibiotic sensitivity has been changing over time with high levels of resistance to commonly used antibiotics. Periodical assessment of microbiological profile is therefore essential for making effective protocols for cases of CSOM.

REFERENCES