A STUDY OF AEROBIC BACTERIOLOGICAL PROFILE OF SAFE AND UNSAFE VARIETY OF CHRONIC SUPPURATIVE OTITIS MEDIA IN A TERTIARY CARE HOSPITAL

Amit Bikram Maiti1, Debajnan Sinha2, Sudip Kumar Das3, Ruma Guha4, Subhra Kanti Sen5, Mayur Nair6

1RMO cum Clinical Tutor, Department of ENT, Midnapur Medical College, Midnapur, West Bengal.
2Assistant Resident, Department of Medicine, Bankura Sammilani Medical College, Bankura, West Bengal.
3Assistant Professor, Department of ENT, Bankura Sammilani Medical College, Bankura, West Bengal.
4Assistant Professor, Department of ENT, Department of ENT, NRS Medical College, Kolkata.
5RMO cum Clinical Tutor, Department of ENT, NRS Medical College, Kolkata.
6Postgraduate Trainee, Department of ENT, Midnapur Medical College, Midnapur, West Bengal.

ABSTRACT

AIMS AND OBJECTIVES

One of the common causes of hearing loss in rural population of India is Chronic Suppurative Otitis Media (CSOM). This study was conducted in Bankura Sammilani Medical College, Bankura, a hilly south-western district of West Bengal to determine aerobic bacteriological profile of CSOM along with profile of safe and unsafe variety of CSOM separately.

MATERIALS AND METHODS

Pus samples were collected from CSOM patients (both safe and unsafe variety) with proper aseptic method from patients attending outpatient department of ENT for 2 years and 6 months. Aural swabs were immediately taken to Microbiology Department for gram staining and culture.

RESULT

A total of 1093 patients were selected for study, among them 559 (59.14%) patients were male and 534 (48.85%) patients were female. Among 1093 total patients, 809 patients had safe type of CSOM and 284 patients had unsafe type of CSOM. In safe type of CSOM majority of patients were in 0-10 years of age group (28.43%) and in unsafe type majority of patients were in age group of 21-30 years (30.76%).

CONCLUSION

Most common aerobic bacteria isolated in safe type of CSOM in descending order are Pseudomonas (40.77%), Staphylococcus aureus (26.97%), Coagulase Negative Staphylococcus (11.70%), E. coli (8.52%), Klebsiella (6.82%), Proteus (5.11%). In unsafe type of CSOM, most common aerobic bacteria isolated are Pseudomonas (57.25%), Staphylococcus aureus (32.06%), Coagulase Negative Staphylococcus (4.19%), Klebsiella (4.19%), E. coli (1.52%) and Proteus (0.76%).

KEYWORDS

Bacteria, Aerobic, India, Otitis Media, Suppurative, Pseudomonas, Staphylococcus.


INTRODUCTION

Chronic Suppurative Otitis Media (CSOM) is long-standing inflammation of mucoperiosteal lining of middle ear cleft. This disease generally present with recurrent mucoid or mucopurulent discharge through a non-intact tympanic membrane.1 It is one of the most common causes of deafness in childhood and is more common among patients of lower socioeconomic group. Proper knowledge of bacteriological profile and antibiotic sensitivity is needed for better management of patients. A few studies were conducted to determine the bacteriological profile of CSOM, both tubotympanic and atticoantral variety. Most of the studies reveal that common organisms involved in CSOM are Pseudomonas aeruginosa, Staphylococcus aureus and Klebsiella, etc. But some studies also revealed that Staphylococcus aureus is the most common organism in CSOM with atticoantral variety.2 Many scientific works have been performed in different parts of the world regarding aerobic bacteriological profile of CSOM, but there is lack of reports from rural areas of West Bengal. Here this topic is selected to study the Aerobic bacteriological profile of CSOM in Bankura, a hilly south-western district of West Bengal where the disease is very much prevalent.

AIMS AND OBJECTIVES

1. To determine the aerobic bacteriological profile of CSOM in rural environment.
2. To compare bacteriological profile between safe and unsafe variety of CSOM.

MATERIALS AND METHODS

The study was conducted in the B. S. Medical College, Bankura, West Bengal in collaboration between Dept. of ENT and Dept. of Microbiology between May 2012 and November 2014 of
total 2 years and 6 months' duration. After taking proper ethical clearance and informed consent, patients were put on study. Total 1093 patients were selected from outpatient department. Among these patients 809 patients had CSOM with central perforation (called as safe type of CSOM) and 284 patients had CSOM with attic pathology, postero-superior marginal perforation (called as unsafe type of CSOM).

Selection Criteria for this Study as Follows
1. Diagnosed case of CSOM (Central perforation, Subtotal perforation, Marginal perforation, attic pathology).
2. Active mucopurulent or purulent discharge at time of examination.

Exclusion Criteria for this Study as Follows
2. Patients taking topical or systemic antibiotic within 1 month.
3. Patients having otitis externa.

Before taking swab from pus in middle ear, external auditory canals and the area around pinna were cleaned with 70% ethyl alcohol and allowed to dry to avoid contamination. Then two cotton swab sticks were introduced into the middle ear to collect the pus samples. Then the swab sticks were taken aseptically into a container and immediately sent to Microbiology Department. The samples were processed by standard methods following CLSI guidelines.

RESULTS
Among 1093 patients, 559 (51.15%) were male and 534 (48.85%) were female; 809 (74.02%) patients had safe type of CSOM and 284 (25.98%) patients were in unsafe type of CSOM group. In safe type of CSOM majority of the patients 230 (28.43%) nos. were in the age group of 0-10 years, while the least 27 (3.33%) nos. were in the age group of 51-60 years [vide Table 1]. In unsafe variety majority of patients 87 (30.63%) nos. were in age group of 21-30 years and least 15 (5.28%) nos. were in age group of 51-60 years [vide Table 2].

<table>
<thead>
<tr>
<th>Age (In Years)</th>
<th>Total No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>230</td>
<td>26.97</td>
</tr>
<tr>
<td>11-20</td>
<td>131</td>
<td>14.76</td>
</tr>
<tr>
<td>21-30</td>
<td>158</td>
<td>17.89</td>
</tr>
<tr>
<td>31-40</td>
<td>105</td>
<td>11.78</td>
</tr>
<tr>
<td>41-50</td>
<td>96</td>
<td>10.96</td>
</tr>
<tr>
<td>51-60</td>
<td>27</td>
<td>3.03</td>
</tr>
<tr>
<td>61-70</td>
<td>62</td>
<td>7.01</td>
</tr>
</tbody>
</table>

**Table 1: Distribution of Patients in Different Age Group in Safe Type of CSOM (N=809)**

Aerobic bacteria isolated in culture of pus of unsafe type of CSOM patient are Staphylococcus aureus 84 (32.06%), Coagulase negative Staphylococcus 11 (4.19%), Pseudomonas 50 (17.25%), E. coli 4 (1.52%), Klebsiella 11 (4.19%), Proteus 2 (0.76%) [vide Table 4].
Most predominant organism of unsafe variety of CSOM is found as Pseudomonas aeruginosa (57.25%) followed by Staphylococcus aureus (32.06%), Coagulase negative Staphylococcus and Klebsiella 4.19% each. E. coli 1.52% and Proteus 0.76%. Kumar et al in their study showed most common organism in unsafe CSOM is Pseudomonas sp. (45%) followed by Staph aureus (13.33%), Klebsiella (18.33%), Proteus and E. coli are 3.33% each. Ravinder Sing Bist et al in their study in 2014 showed slight different result where the most common isolate (aerobic) in chronic otitis media was Staphylococcus aureus (52.63%) followed by Pseudomonas (24.56%) and E. coli (5.26%).

CONCLUSION
Among 1093 cases 809 patients were CSOM with safe type of disease and 284 patients had unsafe disease. In safe type of disease culture positive patients were 79.72% and in unsafe type culture positive patients were 92.25%. The most common organism isolated in safe type of CSOM was Pseudomonas sp. (40.77%) followed by Staph aureus (26.97%). In unsafe type the most common organism involved was Pseudomonas sp. (57.25%) followed by Staph aureus (32.06%). Our study results are mostly similar to the other published literatures in series.

REFERENCES