

## Bacterial Agents Causing Chronic Suppurative Otitis Media

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### Abstract

**Background:** Otitis media which is an acute or chronic inflammatory state of the middle ear may be classified as suppurative or non—suppurative.

**Methods:** A total of 100 ear swabs from cases of chronic otitis media were variously collected from patients attending the ENT Clinic. Specimens were immediately transported in a transport medium to the base laboratory of the Department of Microbiology.

**Results:** Out of a total number of 100 cases of chronic otitis media screened for the isolation of bacterial aetiologic agents, 8 different genera comprising 13 bacterial species were isolated. These included *S. aureus* (39%), *Pseudomonas aeruginosa* (25%), *Proteus mirabilis* (16%), *Alcaligenes faecalis* (5%) and *Klebsiella aerogenes* (1%). *Escherichia coli*, *Proteus rettgeri*, *Staphylococcus epidermidis*, and *Klebsiella pneumoniae*, constituted (3%), (3%), (3%) and 1% of isolates in that respective order. From the number of cases screened, it was observed that 54 (54%) and 46(46%) were males and females respectively.

**Conclusion:** We conclude that higher prevalence of otitis media among males than females and *S. aureus* has been identified as the leading pathogen in chronic otitis media.

**Keywords:** Bacterial Infections, Etiology, Otitis Externa.

### Introduction

Otitis media which is an acute or chronic inflammatory state of the middle ear may be classified as suppurative or non—suppurative<sup>1-2</sup>. Complications of otitis media include meningitis, nasopharyngitis, mastoiditis and sinus thrombosis<sup>3</sup> Decker and Dacker<sup>1</sup> reported the isolation of some bacteria from otitis media, which included *Staphylococcus aureus* (32.2%) and *Pseudomonas aeruginosa* (29.6%). The prevalence of haemolytic *Streptococci*, *S. aureus*, *Haemophilus influenzae* and *Pneumococci* in cases of chronic otitis media has been variously reported. Ndip has also documented the isolation of *S. aureus* (41.2%), *S. influenzae* (13.7%) and

*H. influenzae* (13.7%) from cases of otitis media<sup>4-6</sup>.

An array of other bacterial species has also been isolated from cases of chronic otitis media<sup>7-11</sup> A useful approach in the management of patients with bacterial chronic otitis media impinges on the appropriate use of antibiotics. Unfortunately several species of bacteria have adopted different strategies such as possession of plasmids and beta—lactamase that thus enable them to acquire resistance to antibiotics and notable changes in the pattern of previously reported sensitive isolates to some antibiotics have been documents<sup>12-13</sup> Thus antibiogram of bacterial isolates are not

static and this creates the need for effective update of antibiogram of isolates.

### Materials and Methods

A total of 100 ear swabs from cases of chronic otitis media were variously collected from patients attending the ENT Clinic. Specimens were immediately transported in a transport medium to the base laboratory of the Department of Microbiology. Specimens were then inoculated onto appropriate media and bacterial isolates were adequately identified.

### Results

Out of a total number of 100 cases of chronic otitis media screened for the isolation of bacterial aetiological agents, 8 different genera comprising 13 bacterial species were isolated. These included *S. aureus* (39%), *Pseudomonas aeruginosa* (25%), *Proteus mirabilis* (16%), *Alcaligenes faecalis* (5%) and *Klebsiella aerogenes* (1%). *Escherichia coli*, *Proteus rettgeri*, *Staphylococcus epidermidis*, and *Klebsiella pneumoniae*, constituted (3%), (3%), (3%) and 1% of isolates in that respective order. From the number of cases screened, it was observed that 54 (54%) and 46(46%) were males and females respectively.

**Table 1: Bacterial agents isolated from cases of otitis media (chronic otitis media)**

| Organism isolated                 | No of patients | Percentage |
|-----------------------------------|----------------|------------|
| <i>Staphylococcus aureus</i>      | 39             | 39         |
| <i>Pseudomonas aeruginosa</i>     | 25             | 25         |
| <i>Proteus mirabilis</i>          | 16             | 16         |
| <i>Alcaligenes faecalis</i>       | 5              | 5          |
| <i>Klebsiella aerogenes</i>       | 1              | 1          |
| <i>Escherichia coli</i>           | 3              | 3          |
| <i>Proteus rettgeri</i>           | 3              | 3          |
| <i>Staphylococcus epidermidis</i> | 3              | 3          |
| <i>Klebsiella pneumoniae</i>      | 1              | 1          |
| <i>Proteus vulgaris</i>           | 1              | 1          |
| <i>Acinetobacter spp</i>          | 1              | 1          |
| <i>Haemophilus influenzae</i>     | 1              | 1          |
| <i>Diphtheroids</i>               | 1              | 1          |
| Total                             | 100            | 100        |

### Discussion

The incrimination of different genera and species of bacteria among cases of chronic otitis media screened is indicative of polymicrobial infections and this observation accords with previous reports<sup>6,8</sup>

*S. aureus* (39%), *Pseudomonas aeruginosa* (25%), *Proteus mirabilis* (16%), *Alcaligenes faecalis* (5%) and *Klebsiella aerogenes* (1%). *Escherichia coli*, *Proteus rettgeri*, *Staphylococcus*

*epidermidis*, and *Klebsiella pneumoniae*, constituted (3%), (3%), (3%) and 1% of isolates in that respective order. From the number of cases screened, it was observed that 54 (54%) and 46(46%) were males and females respectively. These results are similar with an earlier report<sup>1</sup>. They reported isolation rates of 30.3% and 29.6% for *S. aureus* and *Pseudomonas aeruginosa* respectively, from cases of otitis media screened. Indeed, the wide array of the bacterial agents

isolated from cases of otitis media in this study have been variously documented by researchers in diverse geographical regions<sup>9-13</sup>

Another interesting observation in this study was the higher prevalence of chronic otitis media among males (54%) than females (36%). This is comparable to the 62.8% and 37.2% observed among males and females respectively<sup>14</sup>

### Conclusion

We conclude that higher prevalence of otitis media among males than females and *S. aureus* has been identified as the leading pathogen in chronic otitis media.

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