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Profile of anaerobic bacteriology of middle ear aspirates in a developing country: Does immunocompromise play a role?☆

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ABSTRACT

Objectives: The study intends to report the profiles of anaerobic bacteria isolated and attempts to evaluate the impact of immunocompromised status of patients on the disease.
Study design: A cross-sectional prospective study.
Setting: ENT clinic, University of Ilorin Teaching Hospital, Nigeria; a 450-bed tertiary health facility.
Subjects: 104 consecutive consenting participants with clinical evidence of CSOM ≥12 weeks.
Methods: A hospital-based study conducted over a seven (7) month period. The middle ear aspirate was obtained with the aid of a micropipette and sent immediately for Microscopy, Culture and Sensitivity of both anaerobic and aerobic bacterial isolates.
Results: A total of 11 patients with chronically discharging ears, of the 104 studied had anaerobic bacteria cultured from their middle ear aspirates. Age ranged from 4 to 50 years with a male:female ratio of 1:1.8. A total of 32 isolates (11 anaerobic and 21 aerobic) were recovered. All anaerobic organisms were mixed and included both *Peptostreptococcus* and *Bacteroides*. Metronidazole had 100% sensitivity to gram negative and 62.5% to gram positive anaerobic organisms tested. Five (5) patients had immunocompromised states of 11 patients with anaerobic bacteria isolated in middle ear aspirates (group I), while 13 immunocompromised patients of the remaining 93 patients with no anaerobic bacteria isolated (group II). The proportion of anaerobic isolates in group I is higher ($p < 0.05$) than in group II.
Conclusion: Immunocompromised state and age appear to play key role in presence of the anaerobic organisms recovered from the middle ear of the patients studied.

1. Introduction

In Chronic Suppurative Otitis Media (CSOM) the aetiological agents often involve bacteria but superimposed fungal infections may also occur, hence mixed aetiology has often been reported [1]. While epidemiology is said to be global, it tends to involve the paediatric age group and the burden in sub-Saharan Africa is enormous [2–4].

The presence of anaerobic bacteria in CSOM is not surprising because it is part of the normal flora of the oropharyngeal mucous membrane which is in close proximity to the middle ear via the eustachian tube [5]. Also tends to have a synergistic relationship with aerobic organisms, enhancing the pathologic role in ear infections as a whole [6]. Amongst other risk factors, immunocompromised states such as malnutrition have been found to constitute significant risk factors in the aetiology of chronic otitis media [7]. Diabetes mellitus (characterized by hyperglycaemia and acidaemia) is another immunocompromised condition, for which several immune function factors have been attributed to increased risks of the condition these include, depressed neutrophil function, compromised antioxidant system and possibility of depressed cell-mediated immunity, but reversed substantially by normalization of the pH and blood glucose levels [8].

Despite the importance of anaerobic bacteria agents in the aetiology of CSOM, there is dearth of literature on these agents in our environment. Hence, the study intends to report the profiles of anaerobic bacteria isolated and attempts to evaluate the impact of immunocompromised status of patients on the disease.

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