

## The Bacteriological Profile of Ear Infections: An Analysis from a Secondary Health Care Center of Sri Lanka

Lakmini Inoka Wijesooriya<sup>1</sup>, G.P.C. Jayawardana<sup>2</sup>, S.H.N.A de Silva<sup>3</sup>, H.C.I Karunasekara

**Introduction:** Bacteria responsible for ear infections are diverse. Therefore, the treatment of such infections needs to be guided by the antibiotic sensitivity data. To prevent shift into the chronic form which leads the burden of morbidity and increased healthcare cost. Having a microbiological profile of ear infections with its antibiotic sensitivity pattern would minimize the burden.

**Objective:** To find out the bacteriological profile and their antibiotic resistance pattern in patients with ear infections

**Methodology:** A descriptive cross-sectional study was conducted prospectively from 01.10.2018 to 30.09.2019 involving sixty-two patients with clinically diagnosed otitis media or otitis externa by the . Organisms responsible were identified and their antibiotic sensitivity was recorded. Antibiotic sensitivity data of the most common organisms were analyzed. Data related to demography, clinical history and previous antibiotic therapy were noted. The level of significance was considered as  $P < 0.05$ .

**Results:** Of the sixty-two patients, 63% (39/62) had otitis externa whereas 37% (23/62) had otitis media. The difference was not significant statistically ( $P = 0.096$ ). In 97% (60/62) of patients, the ear infection was unilateral and in 3% (2/62), it was bilateral. In 48% (30/62) of patients, the current presentation was the first episode, in 27% (17/62), it was the second, in 16% (10/62), it was the third and in 8% (5/62), it was beyond the third episode. In 89% (55/62), patients were treated with empirical antibiotics whereas, in 11% (7/62), the samples were obtained before antibiotics. Of the organisms causing ear infections, *Pseudomonas*–32% (20/62), *Staphylococcus aureus*–25% (15/62), *Candida* spp 12% (8/62), other fungal spp-3%, (2/62) Coliforms-3% (2/62), *Proteus* spp- %, (1/62), *Streptococcus pneumoniae*-2%, (1/62), mixed bacterial growth in 2% (1/62) and no bacterial growth in 19%, (12/62). According to ABST of *Pseudomonas* spp sensitivity was 85% (17/62) for piperacillin-tazobactam, 80% (16/62) for ceftazidime, 75% (15/62) for meropenem, 75% (15/62) for cefoperazone-sulbactam, 70% (14/62) for ticarcillin–clavulanic acid, 70% (14/62) for amikacin, 50% (10/ 62) for gentamicin, 50% (10/62) for Ciprofloxacin and 40% (8/62) for norfloxacin. Of the *S. aureus*, 66.7% (10/15) were methicillin-sensitive (MSSA) and 33.3% (5/15) were Methicillin-resistant (MRSA). According to ABST of MSSA, sensitivity was 100% for gentamicin, chloramphenicol, fusidic acid, teicoplanin and vancomycin, 90% (9/10) for clindamycin, 80% for co-trimoxazole, 70% (7/10) for ciprofloxacin, 60% (6/10) for erythromycin and 50% (5/10) for norfloxacin. Of MRSA, all were sensitive for vancomycin, teicoplanin and fusidic acid, 60% (3/5) were sensitive for clindamycin and none were sensitive for gentamicin, chloramphenicol, co-trimoxazole, ciprofloxacin, erythromycin and norfloxacin.

**Conclusion:** Of ear infections, there was no significant difference between otitis externa and otitis media in proportions. Almost all had unilateral infections. *Pseudomonas* spp were the predominant bacterium identified and the *S. aureus* was the second. More than 75% of the *Pseudomonas* spp were sensitive to piperacillin-tazobactam, ceftazidime, meropenem and cefoperazone-sulbactam. The sensitivity was <50% for gentamicin and norfloxacin. MSSA was sensitive to most antistaphylococcal antibiotics. However, MRSA was sensitive only for limited antistaphylococcal antibiotics.

Keywords: “Bacterial ear infections; Antibiotic sensitivity”

<sup>1</sup> Department of Medical Microbiology, Faculty of Medicine, University of Kelaniya, Ragama, Sri Lanka

<sup>2</sup> Microbiology Laboratory, Base Hospital, Wathupitiwala, Sri Lanka

<sup>3</sup> Microbiology Laboratory, Base Hospital, Wathupitiwala, Sri Lanka