

**The Author's Response:**

The Bacterial Etiology of Otitis Media and Specimen Collection

Owing to the recent overuse and misuse of antibiotics in the treatment of otitis media, we investigated changes over time in pathogens obtained from patients with acute otitis media and otitis media with effusion, including changes in their antibiotic sensitivity.

Effusion samples were collected from patients with otitis media with effusion during surgical insertion of a ventilation tube. A radial incision was made in the anterior inferior quadrants of the tympanic membrane, and an effusion sample was collected. In contrast, aural discharges were collected from patients with acute otitis media using a sterilized otoscope and an extra-thin flexible wire cotton swab after cleaning the external auditory canal, thus minimizing contact with the external auditory canal. The most frequently isolated gram-positive *Staphylococci* observed in the normal flora of the external auditory canal consisted of coagulase negative *Staphylococcus* species, including *S. capitis*, *S. epidermis*, *S. haemolyticus*, and *S. auricularis* (1). Thus, the high frequency of coagulase negative *Staphylococci* in patients with otitis media was likely due to the unexpected contamination of aural discharge samples during collection, despite efforts to minimize contamination by using a sterilized otoscope after cleaning the external auditory canal. Although long regarded as non-pathogenic, coagulase negative *Staphylococci* strains were shown to form biofilms, making them the leading cause of biomaterial-related infections (2). Coagulase negative *Staphylococci* have also been implicated in otitis media, with a recent multicenter study finding that these species account for 60% of bacteria isolated from patients with otitis media with effusion (3). This multicenter study resulted in cultures being taken from different environments, which may have led to differences in contamination rate. Although samples were collected during patients' first visits to the outpatient department, some patients may have been prescribed antibiotics at primary clinics before visiting the tertiary hospital. Because bacterial cultures were not taken from all patients at the time of initial diagnosis at primary clinics, we were unable to determine bacterial populations at initial diagnosis of otitis media. Moreover, because this was a retrospective chart review, we investigated only bac-

teriology and antibiotic sensitivity in patients with otitis media from whom cultures were obtained from January 2010 to May 2015.

Methicillin-resistant *S. aureus* (MRSA) is a bacterium responsible for several difficult-to-treat infections in humans. MRSA is a strain of *S. aureus* that developed through horizontal transfer of the *mecA* gene to at least five distinct *S. aureus* lineages and natural selection (4). MRSA is resistant to various beta-lactam antibiotics, including the penicillins (e.g., methicillin, dicloxacillin, nafcillin, and oxacillin) and the cephalosporins (e.g., cefoxitin, moxalactam) (4). In this study, three methicillin-susceptible *S. pneumoniae* strains were found to be resistant to cefoxitin, whereas *S. aureus* isolates were not.

As mentioned, the most frequently isolated bacterial species in patients with otitis media was coagulase negative *Staphylococci*. We also found that 18 (3.2%) patients with otitis media with effusion and 15 (12.3%) with acute otitis media were positive for fungi. The phrase "coagulase negative *Staphylococcus aureus*" in the Abstract, Results, and Tables 2 and 3 and the value 32.1%, rather than 3.2%, for percentage of patients with otitis media with effusion positive for fungi mentioned in the Discussion section and Table 1 were typographical errors (5).

DISCLOSURE

The authors have no potential conflicts of interest to disclose.

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