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Methicillin-Resistant *Staphylococcus aureus* in melanesian children with Haematogenous Osteomyelitis from the Central Highlands of Papua New Guinea

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Background: Methicillin-Resistant *Staphylococcus aureus* (MRSA) has been an important cause of bone infection since the 1940s. Current guidelines recommend targeted antibiotic use for osteomyelitis treatment informed by microbial sensitivity patterns. However, in settings without microbiology facilities, empirical antibiotic use is common. Unrecognized antibiotic resistance potentiates persistence of MRSA with osteomyelitis progression to chronic forms with complications despite antibiotic treatment.

Method: A prospective observational study done to identify common etiological agent (s) in bone infection in Melanesian children, observe for presence of antimicrobial resistance, and determine effective antibiotic regimes for treatment of bone paediatric osteomyelitis. 70 paediatric patients presenting from the community with osteomyelitis were recruited, with bone and non-bone specimens sampled, cultured and isolates tested for resistance to common antibiotics.

Result: *S. aureus* was isolated in 67% (47/70) of collected specimens. Of the 47 isolates, there was 91.5% resistance to penicillin, 85.1% resistance to methicillin, 89.4% resistance to oxacillin, 93.6% resistance to ampicillin and 80.9% resistance to ceftriaxone. *S.aureus* showed 91.5% sensitivity to gentamycin,

93.6% sensitivity to erythromycin, tetracycline and clindamycin, and 95.7% sensitivity to co-trimoxazole.

Conclusion: MRSA was the leading cause of haematogenous osteomyelitis in Melanesian children. *S.aureus* was isolated mainly from infected long bones of the lower limbs (79%) of children presenting from the community, suggesting a predominantly community-associated MRSA. *S.aureus* also showed 80.9% resistance to ceftriaxone, indicating a potential multidrug resistant MRSA strain. There was > 91% sensitivity to chloramphenicol, tetracyclin, co-trimoxazole, gentamycin and erythromycin which could be used to effectively treat paediatric osteomyelitis in the region.

Speaker Biography

Izzard Aglua holds an MBBS and MPH from James Cook University (Australia). He currently coordinates clinical research on osteomyelitis, stroke and MDR TB at the Kundiawa General Hospital Clinical Research Center in the Simbu Province of Papua New Guinea. He also serves as General Internal Medicine Registrar and Dive Medical Officer for the region. His research work includes identifying genotypes of MRSA isolates from paediatric osteomyelitis and MDR TB isolates from the hospital and assessing speed of recovery between right and left weaknesses after stroke. He has recently published work on both stroke and osteomyelitis as a young researcher and has recently joined the editorial board of the *AS Pediatrics and Current Pediatric Reviews*.

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