

MED/PP/05

Screening for Multi-Drug Resistant Bacterial Colonization among Inward Patients at Anuradhapura Teaching Hospital

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Background: Multi-drug-resistant bacteria, including Methicillin-resistant *Staphylococcus aureus* (MRSA) and Vancomycin-resistant Enterococcus (VRE), pose a significant threat to hospitalized patients and are currently considered major superbugs worldwide.

Objective: This study investigated the MRSA and VRE colonization patterns and associated risk factors among inpatients (n = 25) at the medical wards of professorial unit, Teaching Hospital Anuradhapura.

Methods: Nasal and axillary swabs (n=25) were collected for MRSA screening, and rectal swabs (n=25) were collected for VRE screening, alongside a questionnaire. *S. aureus* was identified using mannitol salt agar, Gram stain, catalase, and coagulase tests. The cefoxitin breakpoint was determined by the disc diffusion method. *Enterococcus* spp. were identified using blood and MacConkey agars, a Gram stain, catalase, bile esculin, and 6.5% NaCl tolerance. Vancomycin susceptibility was determined by the John Stock method. Data were expressed in percentages.

Results: From nasal swabs, two *S. aureus* (8%) were isolated, and one was methicillin-susceptible SA (4%), while the other was MRSA (4%). The MRSA was sensitive to gentamicin, linezolid, teicoplanin, and vancomycin but resistant to ciprofloxacin. The MSSA was sensitive to ciprofloxacin, ceftriaxone, vancomycin and teicoplanin but resistant to gentamicin. One VRE was isolated (4%) from rectal swabs, which was resistant to teicoplanin, vancomycin, ampicillin and ciprofloxacin. All patients colonized with MSSA, MRSA and VRE had prior hospitalization within 6 months, and reported inappropriate antibiotic use based on the questionnaire. However, due to the low positivity, none of the risk factors were statistically significant ($P > 0.05$).

Conclusion: MRSA, MSSA and VRE colonization among study participants were detected in low percentages. However, assessing the correlation between risk factors and superbug colonization required a large sample size. This study is limited by the use of phenotypic methods and small sample size.

Keywords: MRSA, MSSA, VRE, Inward patients, Teaching hospital Anuradhapura