

Prevalence of nasal carriage of *Staphylococcus aureus* and its antimicrobial resistance pattern in patients on hemodialysis, at Hemodialysis Unit, Teaching Hospital Jaffna

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Introduction and Objectives: *Staphylococcus aureus* causes serious bacterial infections in hemodialysis patients. Compared to healthy controls, patients on chronic hemodialysis have twice the rate of *Staphylococcus aureus* nasal colonization and most of these infections are of endogenous origin. Since the hemodialysis patients are immunocompromised, both the methicillin-sensitive *Staphylococcus aureus* (MSSA) and methicillin-resistant *Staphylococcus aureus* (MRSA) are responsible for 70%-90% of vascular access site infections. Determination of antimicrobial resistance patterns is essential for the antibiotic prescription. The present study aimed to determine the prevalence of nasal carriage of *Staphylococcus aureus*, its antimicrobial resistance pattern and factors associated with *Staphylococcus aureus* nasal carriage in patients on hemodialysis at Hemodialysis Unit, Teaching Hospital Jaffna.

Methods: An institution-based descriptive cross-sectional study was conducted among 79 hemodialysis patients at the Hemodialysis Unit, Teaching Hospital Jaffna. Nasal swabs were collected and inoculated onto Blood and MacConkey agar. Gram staining, catalase and coagulase tests were done. Antibiotic sensitivity test was done according to the Clinical and Laboratory Standards Institute (CLSI) method. The associated factors were assessed using Chi-square and Fisher's exact tests in SPSS (version 25.0). The $p < .05$ was deemed as statistically significant.

Results: The prevalence of nasal carriage of *Staphylococcus aureus* was 16.5% (12.7 % MSSA, 3.8 % MRSA) in 79 hemodialysis patients. Among the isolated *Staphylococcus aureus*, 30.8% were resistant to Erythromycin, 23.1% to Cefoxitin and Clindamycin. However, all the isolates were sensitive to Ciprofloxacin, Gentamicin, Teicoplanin and Vancomycin. There were significant associations between *Staphylococcus aureus* nasal carriage and previous use of antibiotics ($p = .035$), vascular access type ($P = .016$), diabetes mellitus ($P = .002$), and recent hospitalizations ($p = .011$). Age, gender, duration on hemodialysis and line related infections were not significantly associated with nasal carrier status of *Staphylococcus aureus*.

Conclusion: The prevalence of nasal carriage of *Staphylococcus aureus* in the current study was lower compared to some studies carried out in other parts of the country. Although isolated strains were sensitive to routine antibiotics, previous use of antibiotics, recent hospitalization, diabetes mellitus significantly associated with *Staphylococcus aureus* nasal carriage.

Keywords: Hemodialysis, *Staphylococcus aureus*, Nasal colonization, Antimicrobial resistance