Hemodialysis patients are particularly vulnerable to Staphylococcus aureus infection, with the vascular access serving as the site of entry for this formidable pathogen” Chu et al (2019).

Abstract:

Hemodialysis patients are particularly vulnerable to Staphylococcus aureus infection, with the vascular access serving as the site of entry for this formidable pathogen. Patients with arteriovenous grafts (AVGs) and tunneled-cuffed catheters (TCCs) are at elevated risk of S. aureus infection. In this study, we investigated the correlation between the clinical characteristics of S. aureus vascular access infection (VAI), molecular profiles, and the biofilm formation abilities of clinical isolates of S. aureus. We collected samples of methicillin-resistant S. aureus (MRSA), methicillin-sensitive S. aureus (MSSA), and methicillin-sensitive S. argenteus (MSSAg) from patients with S. aureus VAI and patients with other infections. The molecular profiles of the clinical isolates were determined using disk diffusion testing and molecular typing. The biofilm formation ability was determined by microtiter plate assay. In total, 63 S. aureus and 10 S. argenteus isolates were identified: 40 MRSA, 23 MSSA, and ten MSSAg. MRSA was highly prevalent (77.8%) in TCC isolates and was multidrug resistant. Of the 40 MRSA isolates, ST239-SCCmec III was the predominant clone. SCCmec type IV was the predominant type (35%) in isolates from AVGs, while SCCmec type III was prevalent in TCC infection and showed significantly higher biofilm formation ability than types IV and V. In dialysis VAI by S. aureus, patients with TCC were more often infected with MRSA than patients with AVG, and MRSA in TCC-VAI was predominantly SCCmec type III, which had the
strongest drug resistance and biofilm formation ability.

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