The purpose of this pilot study was to characterize LTA concentrations in hemodialysis (HD) patients with TCVCs compared to other access types and to evaluate biofilm morphology and microbiology in TCVCs removed by clinical decision.” Pai et al (2019).

Abstract:

Tunneled central venous catheters (TCVCs) are colonized by Gram-positive organisms and form biofilm. Lipoteichoic acid (LTA) is a Gram-positive cell wall component that can be measured in serum. The purpose of this pilot study was to characterize LTA concentrations in hemodialysis (HD) patients with TCVCs compared to other access types and to evaluate biofilm morphology and microbiology in TCVCs removed by clinical decision. The study enrolled patients with TCVCs (18), grafts (19), and fistulas (18). Blood samples were collected before HD, at 30 minutes, 2 hours, and end of HD. Catheters removed by clinical decision were evaluated by scanning electron microscopy (SEM) for biofilm morphology, and portions of the catheter were cultured. LTA was detectable in all samples and concentrations increased significantly in all access types during HD (p < 0.05 for all comparisons). Patients with TCVCs that had a >30% increase in LTA concentration from baseline also had the greatest rate of increase (slope) compared to grafts and fistulas (p = 0.03 and p = 0.04, respectively). Catheters removed by clinical decision (n = 7) and examined by SEM had deposition of fibrin. Cultures revealed polymicrobial colonization. TCVCs had the highest rate
of increase of LTA during HD. Further studies to determine the source of LTA in patients with AVG and AVF are warranted.

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