Ethanol-based catheter locks may provide a better alternative; however, there are limited data on the long-term integrity of dialysis catheters exposed to ethanol” Landry et al (2015).

Abstract:

Purpose: Antibiotic locks in catheter-dependent chronic hemodialysis patients reduce the rate of catheter-related bloodstream infections (CRBSIs), but may be associated with the development of resistant bacteria. Ethanol-based catheter locks may provide a better alternative; however, there are limited data on the long-term integrity of dialysis catheters exposed to ethanol.

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Methods: We performed in vitro testing of two types of hemodialysis catheters—silicone (SLC) and carbothane (CBT) based—with a 70% ethanol lock (EL) versus heparin lock (HL) for 26 weeks. Lock solutions were changed thrice weekly to mimic a conventional hemodialysis schedule. We tested mechanical properties of the catheters at 0, 13 and 26 weeks by examining stress/strain relationships (SS400%) and modulus of elasticity (ME). Electron microscopy was performed to examine catheter ultrastructure at 0 and 26 weeks.

Results: Catheter integrity for HL versus EL in SLC (SS400%: 4.5 vs. 4.5 MPa, p = NS; ME: 4.6
vs. 4.7 MPa, p = NS) or CBT-based catheters (SS400%: 7.6 vs. 8.9 MPa, p = NS; ME: 9.6 vs. 12.2 MPa, p = NS) were all similar at 13 and 26 weeks. Scanning electron microscopy revealed no structural changes in the central and luminal wall internal surfaces of EL- versus HL-treated catheters.

Conclusions: There were no significant differences in catheter integrity between SLC or CBT catheters exposed to a 70% EL for 26 weeks. Given its low cost, potential to avoid antibiotic resistance and structural integrity after 6 months of high-dose ethanol, ELs should be studied prospectively against antibiotic locks to assess the efficacy and safety in hemodialysis patients.

Reference:

Thank you to our partners for supporting IVTEAM