



“One of the agents commonly utilized for lock therapy is ethanol. However, a systematic review of adverse events associated with ethanol locks has not been published.” Mermel and Alang (2014).

Reference:

Mermel, L.A. and Alang, N. (2014) Adverse effects associated with ethanol catheter lock solutions: a systematic review. *Journal of Antimicrobial Chemotherapy*. 69(10), p.2611-2619.

Ethanol intravenous catheter lock solutions examined in a systematic review

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Abstract:

Background: Antimicrobial lock therapy has been widely utilized internationally for the prevention and management of intravascular catheter-related bloodstream infections. One of the agents commonly utilized for lock therapy is ethanol. However, a systematic review of adverse events associated with ethanol locks has not been published.

Methods: PubMed was searched to collect articles published from May 2003 through March 2014. The bibliographies of relevant articles were also reviewed.

Results: In vitro studies of the mechanical properties of catheters after ethanol immersion have revealed changes predominantly in polyurethane catheters and to a lesser extent in silicone and Carbothane catheters. An elution of polymers from polyurethane and Carbothane catheters has been observed at the ethanol concentrations used in ethanol lock therapy. Ethanol above a concentration of 28% leads to plasma protein precipitation. Ethanol locks were associated with catheter occlusion in 11 studies and independently increased the risk of thrombosis compared with heparin lock in a randomized trial. Six studies noted abnormalities in catheter integrity, including one case leading to catheter embolization. Of note, five of these studies involved silicone catheters. Ethanol lock use was associated with systemic side effects in 10 studies and possible side effects in one additional study. Four studies noted liver function test abnormalities, predominantly transaminase elevation, related to ethanol lock use. However, a prospective study did not find any difference in the risk of doubling the transaminase level above the normal range during use of ethanol locks compared with not using an ethanol lock.

Conclusions: The use of ethanol locks has been associated with structural changes in catheters, as well as the elution of molecules from the catheter polymers. Clinical studies have revealed systemic toxicity, increased catheter occlusion and breaches in catheter integrity.

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