see Antibiotic impregnated catheter.

see Silver impregnated catheter.

The aim of a study was to evaluate the effectiveness of antimicrobial-impregnated and -coated shunt catheters (antimicrobial catheters) in reducing the risk of infection in patients undergoing CSF shunting or ventricular drainage.

The PubMed and Scopus databases were searched. Catheter implantation was classified as either shunting (mainly ventriculoperitoneal shunting) or ventricular drainage (mainly external [EVD]). Studies evaluating antibiotic impregnated catheters (AICs), silver coated catheters (SCCs), and hydrogel-coated catheters (HCCs) were included. A random effects model meta-analysis was performed.

Thirty-six studies (7 randomized and 29 nonrandomized, 16,796 procedures) were included. The majority of data derive from studies on the effectiveness of AICs, followed by studies on the effectiveness of SCCs. Statistical heterogeneity was observed in several analyses. Antimicrobial shunt catheters (AICs, SCCs) were associated with lower risk for CSF catheter-associated infections than conventional catheters (CCs) (RR 0.44, 95% CI 0.35-0.56). Fewer infections developed in the patients treated with antimicrobial catheters regardless of randomization, number of participating centers, funding, shunting or ventricular drainage, definition of infections, de novo implantation, and rate of infections in the study. There was no difference regarding gram-positive bacteria, all staphylococci, coagulase-negative streptococci, and Staphylococcus aureus, when analyzed separately. On the contrary, the risk for methicillin-resistant S. aureus (MRSA, RR 2.64, 95% CI 1.26-5.51), nonstaphylococcal (RR 1.75, 95% CI 1.22-2.52), and gram-negative bacterial (RR 2.13, 95% CI 1.33-3.43) infections increased with antimicrobial shunt catheters.

Based on data mainly from nonrandomized studies, AICs and SCCs reduce the risk for infection in patients undergoing CSF shunting. Future studies should evaluate the higher risk for MRSA and gram-negative infections. Additional trials are needed to investigate the comparative effectiveness of the different types of antimicrobial catheters [1)].

1)
Konstantelias AA, Vardakas KZ, Polyzos KA, Tansarli GS, Falagas ME. Antimicrobial-impregnated and -coated shunt catheters for prevention of infections in patients with hydrocephalus: a systematic review and meta-analysis. J Neurosurg. 2015 May;122(5):1096-112. doi: 10.3171/2014.12.JNS14908. Epub 2015 Mar 13. Review. PubMed PMID: 25768831.