Silver impregnated catheter

see also VentriGuard.

It is a type of antimicrobial catheter.

External ventricular drainage (EVD) is one of the most common and effective procedures in neurosurgery practice. However, catheter related infection (CRI), which is associated with significant mortality and morbidity, plagues this procedure.

Cui et al. evaluated the efficacy of antibiotic-impregnated EVD (AI-EVD) and silver-impregnated EVD (SI-EVD) catheters compared with plain EVD catheters for the prevention of CRI.

The authors performed an independent search of Medline, Embase, and the Cochrane Library to identify eligible studies published between January 2002 and August 2014. We searched all relevant literature using an exhaustive search strategy. Randomized controlled trials or observational studies that compared AI-EVD catheters with plain EVD catheters for the prevention of CRI were included. The quality of each included study was assessed using a risk of bias assessment tool and the Newcastle-Ottawa Scale. RevMan5.3 software (The Cochrane Collaboration, Oxford, UK) was used to perform this meta-analysis, and publication bias was investigated using funnel plot constructions and Egger test. RESULTS:

A total of 4 randomized and 10 observational studies involving 4,399 patients were included in this meta-analysis. Pooled results comparing AI-EVD catheters with plain EVD catheters in the management of patients with acute high intracranial pressure demonstrated the superiority of antimicrobial EVDs for the prevention of CRI with a risk induction of 62% (95% confidence interval [CI], 0.25-0.58; P < .00001). Subgroup analyses of pooled data from separate analyses of AI-EVDs and SI-EVDs showed the efficacy of both measures for CRI prevention, with a risk ratio (RR) of 0.31 (95% CI, 0.18-0.55; P < .0001) and an RR of 0.59 (95% CI, 0.40-0.88; P = .010), respectively. The protective effects of these AI-EVD catheters remained significant in the subgroup of randomized controlled trials with an RR of 0.48 (95% CI, 0.25-0.90; P = .02). A similar result was also seen after a pooled analysis of observational studies with an RR of 0.35 (95% CI, 0.21-0.60; P = .0001). The heterogeneity among studies was moderate (I(2) = 49%) and was primarily attributed to the inclusion of 1 large, positive cohort study. Publication bias was unlikely in the current meta-analysis.

The restults indicate that both AI-EVDs and SI-EVDs are more effective than plain EVDs for the prevention of CRI. There is no conclusive evidence on the preference of AI-EVDs vs SI-EVDs because of insufficient data. Further well-designed, multicenter randomized controlled trials are required to confirm the findings of this meta-analysis [1].

1)
Cui Z, Wang B, Zhong Z, Sun Y, Sun Q, Yang G, Bian L. Impact of antibiotic- and silver-impregnated external ventricular drains on the risk of infections: A systematic review and meta-analysis. Am J Infect Control. 2015 Jul 1;43(7):e23-32. doi: 10.1016/j.ajic.2015.03.015. Epub 2015 Apr 29. PubMed PMID: 25934064.