

CLINICAL EVIDENCE

Impact of oligon central venous catheters on catheter colonization and catheter-related bloodstream infection

Marco Ranucci, MD et al.

Critical Care Medicine (January 2003); 31 (1): 52-59

Abstract

Objective: To evaluate a new antimicrobial treatment for central venous catheters in comparison with a traditional treatment, by assessing the catheter colonization and catheter-related bloodstream infection rates in two groups of patients.

Design: Multiple-center, prospective randomized study.

Setting: The medical and surgical departments of ten institutions.

Patients: Patients requiring a central venous catheter for medical or surgical pathologies between June 2000 and November 2001.

Interventions: Patients in the control group received a conventional benzalkonium-treated double-lumen central venous catheter, while patients in the oligon group received an oligon-treated (polyurethane combined with silver, carbon, and platinum) catheter with the same characteristics. Data collection included demographics, preexisting clinical conditions, main pathology, catheter insertion, and management data. Catheter colonization was defined as the growth of $>$ or $=$ 15 colony-forming units in culture of catheter segments by the roll-plate method, or $>$ or $=$ 1000 colony-forming units for the sonication method, and catheter-related bloodstream infection was defined as isolation of the same organism from the colonized catheter and from the peripheral blood of a patient with clinical signs of bloodstream infection.

Measurements and Main Results: Data were obtained from 545 catheters. Of these, 132 catheters (24.2%) were positive for colonization. Patients in the oligon group demonstrated a lower risk for catheter colonization in the overall population (relative risk, 0.63; 95% confidence interval, 0.46-0.86; $p = .003$) and in the surgical subgroup (relative risk, 0.5; 95% confidence interval, 0.33-0.76; $p = .001$). Significant differences between groups were detected for coagulase-negative staphylococci and Gram-negative bacilli colonization rates. Twenty-one patients (3.8%) were positive for catheter-related bloodstream infection, without significant differences between control and oligon groups.

Conclusions: Oligon treatment is effective in limiting the catheter colonization rate. Due to the limited amount of events, this study lacked the power to detect significant differences in terms of catheter-related bloodstream infection rate.