

Abstract:

Background: Indwelling central venous catheters (CVC) are used to provide long term hemodialysis. The commonest and the severe complication of CVC is the central line-associated bloodstream infection (CLABSI). This study was done to assess the etiology and infectious complications of CVC in children on long term hemodialysis.

Methods: Children newly undergoing hemodialysis and having indwelling CVC were included. They were followed up to a period of 2-years to assess infectious complications. Catheter bundle care approach was employed to prevent infections and other complications. Automated culture from the central catheter and peripheral vein and 2D echocardiography were done in each hemodialysis. Serial procalcitonin (PCT) was measured. Differential time of positivity (DTP) was used to detect CLABSI. During homestay in weekly telephone conversations were done to assess features of infection, and whenever having, we have asked to admit to the tertiary care unit. Logistic regression was performed, and the significant outcome variable was considered following multivariable analysis as a risk factor.

Results: Blood cultures were positive in 1090 (74.5%) out of 1462 children. According to DTP, 410 (28%) were having CLABSI, while 520 (35.6%) were having bacteremia without CLABSI. Out of 410 CLABSI patients, 79 (19.2%) were asymptomatic. Coagulase-negative Staphylococcus spp. (CoNS) bacteremia was significantly associated with asymptomatic CLABSI. Right-sided infective endocarditis (RS-IE) was significantly associated with asymptomatic CLABSI and asymptomatic bacteremia without CLABSI. CoNS was associated significantly in RS-IE following asymptomatic CLABSI and asymptomatic bacteremia. PCT was in asymptomatic CLABSI was 1.8 ± 0.9 ng/mL while in symptomatic CLABSI was 11.3 ± 2.5 ng/ml ($P = 0.02$). CoNS bloodstream infection, tunneled CVC, peripherally inserted central catheter, femoral site, the number of line days > 90 , receipt of vancomycin, meropenem, or linezolid in the 5 days before CLABSI diagnosis and recurrent bacteremia were risk factors for asymptomatic CLABSI.

Conclusions: Asymptomatic CLABSI could be a rare occurrence. CoNS was predominantly isolated in patients with asymptomatic CLABSI. RS-IE is a well-known complication in long term indwelling CVC. CoNS was significantly associated with RS-IE following asymptomatic CLABSI. Regular procalcitonin, microbiological, and imaging studies would be essential to detect infectious complications in both symptomatic and asymptomatic patients implanted with long term indwelling CVCs.

Reference:

Jayaweera, J. and Sivakumar, D. (2020) Asymptomatic central line-associated bloodstream infections in children implanted with long term indwelling central venous catheters in a teaching hospital, Sri Lanka. BMC Infectious Diseases. 20(1), p.457.

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