Rates of access-related bloodstream infections (AR-BSI) are influenced by patient characteristics and local protocols. We explored factors associated with AR-BSI in a contemporary cohort of HD patients at a tertiary nephrology centre" Mohamed et al (2019).

Abstract:

BACKGROUND: Infections are the second leading cause of death and hospitalisation among haemodialysis (HD) patients. Rates of access-related bloodstream infections (AR-BSI) are influenced by patient characteristics and local protocols. We explored factors associated with AR-BSI in a contemporary cohort of HD patients at a tertiary nephrology centre.

METHODS: A retrospective cohort of 235 chronic HD patients was identified from a regional dialysis programme between Jan 2015 and Dec 2016. Data on demographics, primary renal disease, comorbid conditions and dialysis access type were obtained from the Kidney Disease Clinical Patient Management System (KDCPMS). Data on blood cultures were captured from the microbiology laboratory. Poisson regression with robust variance estimates was used to compare infection rates and relative risk of AR-BSI according to the site and type of vascular access.

RESULTS: The mean age was 65 (± 15) years, 77% were men, and the median follow up was

19 months (IQR: 10-24 months), accumulating 2030 catheter-months and 1831 fistula-months. Overall rates of AR-BSI were significantly higher for central venous catheter (CVC) compared to arteriovenous fistula (AVF), (2.22, 95% (CI): 1.62-2.97) versus 0.11 (0.01-0.39) per 100 patient-months respectively), with a rate ratio of 20.29 (4.92-83.66), $p < 0.0001$. This pattern persisted across age, gender and diabetes subgroups. Within the CVC subgroup, presence of a femoral CVC access was associated with significantly higher rates of AR-BSI (adjusted RR 4.93, 95% CI: 2.69-9.01). Older age (75+ versus < 75 years) was not associated with significant differences in rates of AR-BSI in the unadjusted or the adjusted analysis. Coagulase negative Staphylococcus (61%) and Staphylococcus aureus (23%) were the predominant culprits. AR-BSIs resulted in access loss and hospitalisation in 57 and 72% of events respectively, and two patients died with concurrent AR-BSI. CONCLUSIONS: Rates of AR-BSI are substantially higher in CVC than AVF in contemporary HD despite advances in catheter design and anti-infective protocols. This pattern was consistent in all subgroups. The policy of AVF preference over CVC should continue to minimise patient morbidity while at the same time improving anti-infective strategies through better care protocols and infection surveillance.

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Mohamed, H., Ali, A., Browne, L.D., O'Connell, N.H., Casserly, L., Stack, A.G. and Hussein, W.F. (2019) Determinants and outcomes of access-related blood-stream infections among Irish haemodialysis patients; a cohort study. BMC Nephrology. 20(1), p.68.

doi: 10.1186/s12882-019-1253-x.