



The purposes of this study were to determine the incidence of central and peripheral venous catheter-related bacteraemias, the relationship between the suspected and final confirmed bacteraemia origins, and the differences in microbiological, epidemiological, clinical, and analytical characteristics between the groups, including evolution to death” Ruiz-Giardin et al (2019).

Abstract:

BACKGROUND: The purposes of this study were to determine the incidence of central and peripheral venous catheter-related bacteraemias, the relationship between the suspected and final confirmed bacteraemia origins, and the differences in microbiological, epidemiological, clinical, and analytical characteristics between the groups, including evolution to death.

METHODS: This was a 7-year descriptive retrospective populational study of all bloodstream infections, comparing central (CB) and peripheral (PB) venous catheter-related bacteraemias in patients older than 15 years.

RESULTS: In all, 285 catheter-related bacteraemia patients, 220 with CBs (77.19%) and 65 with PBs (22.81%), were analysed among 1866 cases with bloodstream infections. The cumulative incidence per 1000 patients-day of hospital stay was 0.36 for CB and 0.106 for

PB. In terms of the suspected origin, there was less accuracy in diagnosing catheter-related bloodstream infections (68.2%) than those of other origins (78.4%), $p < 0.001$. The accuracy was greater for PB (75%) than for CB (66.2%), Coagulase-negative staphylococci were the most frequent microorganisms in both groups but occurred 1.57 times more frequently in CB (64.1%/40.6%) ($p = 0.004$), while *Staphylococcus aureus* (23.4%/9.5%) ($p = 0.02$) and Enterobacteriaceae species (15.6%/6.3%) ($p = 0.003$) were 2.5 times more frequent in PB. The CB patients stayed at the hospital for an average of 7.44 days longer than did the PB patients; more CB patients had active neoplasia (70.4%/32.8%), more had surgery in the previous week (29.2%/8.3%), and fewer received adequate empirical treatment (53.9%/62.5%). Catheter was not removed in 8.2% of CB and 3.7% of PB. On the other hand, the CB and PB patients had similar Pitt scores at blood extraction (median 0.89 versus 0.84 points, respectively; $p = 0.8$) and similar survival rates at hospital discharge (91.1% versus 90.2%; $p = 0.81$). CONCLUSIONS: Central catheters were more frequent sources of bacteraemias than were peripheral catheters. There were important differences in the microbiological aetiology as well. PB patients received correct empirical antibiotic treatment more frequently and had a higher initial rate of correct determination of the suspected source of bacteraemia. Differences in the microbiological aetiology and empirical antibiotic treatment received, and probably catheter removal and time to catheter removal could explain why CB and PB patients had similar survival rates.

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Reference:

Ruiz-Giardin, J.M., Ochoa Chamorro, I., Velázquez Ríos, L., Jaqueti Aroca, J., García Arata, M.I., SanMartín López, J.V. and Guerrero Santillán, M. (2019) Blood stream infections associated with central and peripheral venous catheters. *BMC Infectious Diseases*. 19(1), p.841. doi: 10.1186/s12879-019-4505-2.



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