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"Blood Culture Contamination In Children's Medical Center Of Tehran From April To July 2004"

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Abstract:

Background: Blood culture is the criterion standard for identifying children with bacteremia. However, elevated false-positive rates are common and are associated with substantial health care costs. The aims of this prospective study were to: 1) determine the rate of blood culture contamination 2) determine variety and frequency of contaminant bacteria 3) compare the duration of hospital stay and antibiotic administration in patients with true bacteremia vs those have false positive blood culture. Materials and Methods: Cross-sectional study conducted April through July 2004 among patients aged 14 years or younger who were admitted at Doctor Garib Children Medical Center of Tehran and had a blood culture obtained as part of their care. Bacterial isolates were identified to species level and medical records were reviewed in all cases with a positive blood culture. A number of clinical and laboratory criteria were used to deciding whether a blood isolate is a pathogen or a contaminant. These include the identify of the micro-organism itself, clinical features such as fever and leukocytosis; the proportion of blood culture sets positive as a function of the number of sets obtained and to have an indwelling vascular catheter or prosthetic device. Results: During the study period, 2877 sets of blood culture were evaluated and the rates of positive blood cultures associated with significant bacteremia and contamination were 1.04% and 5.4% respectively. Among the positive blood cultures, over the 84% of isolates were due to contamination and only 15.95% of isolated strains associated with true infection. The frequency of isolated bacteria with respect to true infection and contamination are as following: S. Aureus (infect: 9.0%, contam: 0.0%), S. Epidemidis (infec: 0.0%, contam: 13.3%), Micrococcus sp. (infec: 0.0%, contam: 4.3%), pseudomonas and related species other than P. aeruginosa (infec: 2.1%, contam: 60.6%), viridans group of streptococci (infec: 1.1%, contam: 2.1%), E.coli (infec: 1.06%, contam: 0.0%), Klebsiella pneumoniae (infec: 0.53%, contam: 0.0%), Enterobacter cloacae (infec: 0.53%, contam: 0.0%), and Acinetobacter baumannii (infec: 0.25%, contam: 0.53%). The mean of hospital stay for patients with true bacteremia, 14.83 days, was not significantly higher than that for patients with false-positive blood cultures (10.08 days). 43 patients had administrated one to three antibiotics after false-positive blood cultures. Conclusion: The findings indicate that blood culture contamination rate in studied hospital is higher than standard levels, and very high rate of contamination with environmental pseudomonas species shows an unusuall epidemic condition. The findings also suggests high resource utilization and prolong patients stay due to pseudobacteremia.

Keywords:

Blood cultre ، pseudomonas sp

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