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Procalcitonin levels in intensive care unit setting in patients with positive blood cultures

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Background: Procalcitonin (PCT) is a biomarker of severe sepsis caused by bacterial infections. There is a paucity of evidence about the relationship of procalcitonin levels with variables such as site of infection and comorbidities.

Methods: We conducted a retrospective pilot study of patients admitted to the medical and cardiac intensive care unit (ICU) from December 1, 2013 to November 30, 2014. Adults over 18 years of age with 1 positive blood culture and PCT levels drawn within 24 hours were included. 48 patients met these criteria. PCT levels were compared between true positive and contaminant/false positive blood cultures. Contaminated cultures were defined as coagulase negative *Staphylococcus* and diphtheroids with other non-infectious sources of sepsis. Site of infection was defined as respiratory, line-related, skin or soft tissue, intra-abdominal or urinary tract. Co-morbidities investigated were systolic and diastolic heart failure, acute and chronic renal failure. Independent sample t tests and Pearson's correlations were used for analysis using SPSS®22.

Results: Mean PCT levels were higher in intra-abdominal (19.54±22.14) compared to respiratory infections (3.55±7.64), p=0.067. PCT levels were higher in patients with kidney dysfunction, (r=0.541, p<0.001). Higher mortality was observed in patients with positive blood cultures, 58% compared to average ICU mortality rates of 30-35%. There were no statistically significant differences between mean PCT levels for true versus false positive blood cultures (53.63±130.52 versus 24.21±61.34, p=0.61), congestive heart failure, age and race.

Conclusion: We present a retrospective pilot study investigating PCT levels in ICU patients in relation to multiple variables. Our study shows a trend of higher PCT levels in intra-abdominal compared to lung infections and elevated PCT levels in patients with kidney dysfunction. Mortality in patients with positive blood cultures was also higher than average ICU mortality at the study center. There was no statistically significant difference found between the other studied variables including true and false positive blood cultures. Due to small sample size, the power was limited. Our goals for future research will focus on expansion of data collection sample size.

Biography

Aditya Shah is currently in his Residency training at University of Illinois Chicago, Advocate Christ Medical Centre in USA. He has worked as a Research Assistant at University of Chicago from 201-2014. He has attended Dr. D Y Patil Medical College, Mumbai, India to pursue medicine. He is a Co-Chairman of Indian American Medical Association, Illinois. He has published his research work in peer-reviewed journals and also presented it through oral/poster presentation in many international conferences.

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