USEFULNESS OF PROCALCITONIN IN DETECTION AND MONITORING TREATMENT OF BACTERIAL INFECTIONS

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Background

The usefulness of procalcitonin (PCT) in identifying bacterial sepsis has been generally accepted based on a large body of evidence. The utility of PCT in identifying less serious bacterial infections and in monitoring the progress of treatment of bacterial infections is still controversial. At the VA New Jersey Health Care System, our laboratory has offered PCT test since November of 2013. We now have the opportunity to retrospectively review our PCT data and microbiology data along with the clinical assessment of patients to try to determine if PCT is useful in these two areas (detection and treatment monitoring).

Methods

In our Process Improvement Project, we obtained PCT and culture results from the laboratory data archive. Cases were identified and reviewed. Bacterial infection is defined as when the event was identified as such in the patient discharge summary.

Results

A total of 203 PCT assays were done from November 2013 to April 2014, involving 130 patients and 144 positive cultures. The significance of each PCT result was manually reviewed for utility as a predictor for bacterial infection and for monitoring effectiveness of therapy. We had 54 assays in which there was presence of a positive bacterial culture done between -3 and +7 days of the assay; 32 of 54 (60%) had PCT levels of 0.1 IU or higher; 22 (40%) has levels <0.1. In those with levels <0.1, there was only one positive blood culture with a coagulase-negative staphylococcus (contaminant). Most of these negative assay were from mild UTIs and soft tissue infections. The positive culture group had an average PCT value of 11.7, median of 0.16. There were 149 PCT assays with no associated cultures done and could not be analyzed with any confidence. There were 24 patients with serial values done during treatment. The rates of decrease during treatment depended on the type of infection. Decreases of >2 IU/day were seen in patients (n=5) with resolving sepsis.

Results & Analysis

Conclusions

1) PCT levels were increased during serious bacterial infection. Urine and soft tissue infections may not have elevated PCT values.
2) If initial PCT levels are high, successful treatment will result in incremental decreases.
3) Proper application of PCT should assist in the guidance of antibiotic use and determining durations of treatment of bacterial.

References

Tang BM1, Esllick GD, Craig JC, McLean AS. Lancet Infect Dis. 2007 Mar;7(3):210-7