



Procalcitonin Is a More Specific Marker and Has a Higher Positive Predictive Value for Identifying Cases of Spinal Postoperative Infections than ESR or CRP

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Introduction

Post-operative infections can be difficult to detect using the standard available blood test including WBC, ESR, and CRP. While the sensitivity of these tests is high, the specificity is low making it difficult to guide treatment decisions. Procalcitonin reacts more selectively for bacterial infections making it potentially a more useful marker.

Methods

A Prospective study looking at patients (N=44) whom underwent spine surgery had WBC, ESR, CRP and Procalcitonin levels drawn pre and post-operatively. Patients (N=16) who returned to the emergency room or clinic with complaints suggestive of an infection were included in the study. Inclusion criteria were patients who had WBC, ESR, CRP and procalcitonin drawn prior to administration of the first dose of antibiotics and who went to the operating room for wound exploration. Infection was determined at the time of surgery based on evidence of inflammation and gram stain. All surgeons were blinded to the laboratory values.

Results

Procalcitonin had a 98% positive predictive value (PPV) as compared with ESR (89%) and CRP (91%) for not being elevated as a result of tissue manipulation. 10 of 16 patients (62.5%) had infectious complications related to surgery. As a predictor for early wound infection, the sensitivity, specificity and PPV for procalcitonin was 90%, 83.3% and 90% respectively. This is compared with ESR values 90%, 20% and 69.2% and CRP 100%, 16.7% and 64.3% respectively.

Conclusions

The diagnostic accuracy of procalcitonin in detecting post-operative infection was higher than C-reactive protein or ESR. Procalcitonin is an extremely efficient marker and it can speed identifying perioperative infection. It will also lower the cost of their identification. The use of procalcitonin may also allow tailoring of antibiotic courses, in turn lowering patient costs.

Learning Objectives

1. By the conclusion of this session, participants should be able to understand markers to identify infection.
2. Describe the importance of the pathophysiology of bacteria and how it is used to identify infection.

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