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Optimal ESR and CRP cut-off values based on new criteria for periprosthetic joint infection

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Infections, as the news has shown time and again, can be deadly. Periprothesthetic joint infection (PJI) is the infection of grave concern to the orthopedic community, especially in its growingly common antibiotic-resistant form. This all-too-common infection can be found deep inside the joint prosthesis following joint replacement surgery.

Javad Parvizi, MD, and colleagues at the Rothman Institute at Jefferson have worked for years to find a solution to this sometimes deadly infection. Their most recent work has attempted to determine the optimal thresholds for two common biomarkers for systemic inflammation and infection. It will be presented on Thursday, March 21, 2013, at 4:06 pm, McCormick Place, Room S105, at the American Academy of Orthopedic Surgeons (AAOS) annual meeting in Chicago.

In previous studies, it was determined that testing the blood for elevated levels of C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR), known biomarkers for systemic inflammation and infection, was an accurate test for determining the presence of an infection. But, the levels of ESR and CRP that should sound the infection alarm have been inconsistent, particularly in regard to a new, industry-wide agreed upon definition for PJI.

The team retrospectively reviewed 1,993 patients who underwent revision surgery for aseptic failure (1,095 hips, 594 knees) or PJI (112

hips, 192 knees) between 2000 and 2009. Patients with comorbidities that could elevate the serum inflammatory markers were disqualified from the study.

Analysis was performed to determine the optimal threshold and test characteristics for ESR and CRP in hips and knees separately. The study found that the real threshold for these tests is higher than previously thought. In addition, researchers found that there is a difference between the knee and hip with regard to the extent these inflammatory markers are elevated with PJI.

The study confirmed the utility of ESR and CRP as a combination test in PJI diagnosis in a large cohort at a single institution. "The findings suggest conventional thresholds for these inflammatory markers may need to be refined to improve their accuracy in diagnosing PJI," says Dr. Parvizi.

Provided by Thomas Jefferson University

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