

Research suggests use of LE strips to diagnose PJI

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Rothman Institute at Jefferson joint researchers continue to seek better ways to diagnose and subsequently treat periprosthetic joint infection (PJI) in patients following total joint arthroplasty. Their latest research shows leukocyte esterase reagent (LE) strips, common in diagnosing urinary tract infections, can also have a role in rapid diagnosis of PJI.

The prospective study built on previous work conducted by Javad Parvizi, MD, FRCS, director of Research at the Rothman Institute and Professor of Orthopedics at Jefferson Medical College, and fellow researchers to develop a better, faster way to diagnose PJI.

"Our continued research will help us get to the root cause of PJI and therefore enable us to diagnose this terrible condition expeditiously, inexpensively, and with minimal risk to patients," said Parvizi.

Their latest findings on the use of LE strips will be presented at the American Academy of Orthopedic Surgeons annual meeting in San Francisco on Tuesday, February 7.

PJI continues to be a concern for the industry as [antibiotic-resistance](#) organisms have increased the prevalence of post-surgical periprosthetic infections. Deep periprosthetic joint [infection](#) is currently the most common indication for revision of total knee arthroplasty and the third most frequent indication for revision of total [hip arthroplasty](#).

The team hypothesized that more than the [neutrophils](#) themselves; it is

the enzymes they secrete that may be better markers for infection. They tested the sensitivity and specificity of a method for detecting one of those enzymes, leukocyte esterase. Esterase is an enzyme released by [white blood cells](#) and is associated with other types of bacterial infections, including [urinary tract infections](#).

They performed intraoperative aspirations on 117 patients between 2007 and 2009 and tested for the presence of leukocyte esterase using a simple colorimetric strip [test](#). Color change, denoting the presence and level of enzyme, was recorded.

Of those tested, 23 were determined to be infected and 94 were determined to be uninfected. When using the highest level of infection as the threshold for a positive test, the test was 86.4 percent sensitive for infection and 95.8 percent specific for esterase, and when using smallest level of detected infection as threshold, the test was found to be 59.9 percent sensitive and 98.8 percent specific, showing that testing for leukocyte esterase in the synovial fluid is a valuable addition to the diagnostic armamentarium for PJI. LE strips also aid in rapid testing. "While this is our first test of LE strips for use in diagnosing PJI, our findings show the test to be accurate for detecting infection in the synovial fluid. This is encouraging as we continue in our research to better understand, detect and treat PJI in our patients," said Parvizi.

Provided by Thomas Jefferson University

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