Synovial Lactic Acid and Septic Arthritis

To the Editor: In their Rational Clinical Examination article, Dr Margaretten and colleagues1 concluded that the synovial fluid white blood cell count and the corresponding percentage of polymorphonuclear cells are the most useful markers in identifying septic arthritis while waiting for the Gram stain and culture test results. Synovial fluid glucose, protein, and lactate dehydrogenase were not found to be helpful.

In the past, synovial fluid lactic acid measurement was proposed as a useful test in the rapid differentiation between septic and nonseptic arthritis. For example, in the study by Riordan et al,2 lactic acid seemed to be more sensitive than Gram stain (especially if antibiotics had been administered before joint aspiration) and could be measured even when the synovial fluid was too thick for a cell count to be performed. In addition, synovial fluid lactic acid can be assessed rapidly in a blood gas analyzer and may be available to clinicians even before the synovial fluid cell count and differential. It would be helpful if the authors’ literature search provided data on the value of this easy-to-obtain and seemingly useful test.

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In Reply: Our search of the literature identified 6 studies1-6 that address synovial fluid lactic acid as a clinical test for septic arthritis. Previous studies2-5 suggest that although synovial lactic acid dehydrogenase (LDH) by enzymatic analysis may be sensitive for detecting bacterial infection, it is not specific, and elevated synovial LDH levels may be observed in noninfectious inflammatory and crystal-induced arthropathies, such as rheumatoid arthritis and gout.

The identified studies were heterogeneous in their measurement of lactic acid. Brook et al,4 Gratacós et al,2 and Riordan et al3 evaluated lactic acid concentration by gas liquid chromatography, while Mossman et al1 and Shmerling et al6 assessed LDH by enzymatic analysis. Furthermore, Gratacós et al evaluated D-lactic acid, an optical isomer of L-lactic acid. The other studies did not identify if they were referring to D-lactic acid, L-lactic acid, or both. Most studies of synovial lactic acid were excluded from our meta-analysis because of their heterogeneity, and they did not evaluate a clinical test of interest.

The studies by Shmerling et al6 were included because they were of high study quality and level of evidence. As stated in our article, the studies by Shmerling et al4 showed synovial LDH had 100% sensitivity but poor specificity with only half the cases being septic arthritis, resulting in many false-positive test results. These results may suggest that a low level of synovial fluid LDH would exclude the diagnosis of septic arthritis, but the negative likelihood ratio of 0.10 (95% confidence interval, 0.00-1.60) is not statistically significant.

Gas liquid chromatography assay of lactic acid may be more useful than enzymatic analysis of LDH. Although there are limited data from small numbers of patients to support the usefulness of synovial lactic acid measurement, such as in Riordan et al3, we believe that there is not enough evidence to encourage it as a routine test to diagnose septic arthritis at this time. However, synovial lactic acid estimation by gas liquid chromatography deserves further study.

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CORRECTION

Data Error in Table: In the Original Contribution entitled “Effects of Citalopram and Interpersonal Psychotherapy on Depression in Patients With Coronary Artery Disease” published in the January 24, 2007, issue of JAMA (2007;297(4):367-379), a data error occurred in Table 3 on page 374. In the column labeled “IFT + Citalopram” under “Factorial Group,” the number of patients in the “Response” row should have been 33. The percentage (49.3%) is correct. The correction does not change the results of the analysis.