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Synovial Glucose Value and Synovial Lactate Dehydrogenase Value are Useful Markers in Differentiating Septic Arthritis from Noninfectious Arthritis of the Knee.

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Summary:
Synovial glucose value and synovial LDH value are useful and significant markers in differentiating septic arthritis from culture negative, noninfectious arthritis.

Abstract:
INTRODUCTION
Differentiating septic arthritis from noninfectious arthritis is difficult, because noninfectious, inflammatory arthritis has similar clinical manifestations with septic arthritis. The purpose of this study is to retrospectively evaluate several serologic and synovial markers that can be useful in differentiating culture-positive septic arthritis from culture-negative, noninfectious arthritis.

METHODS
A retrospective study was performed by reviewing medical records of 39 patients suspicious for infection of the knee joint from September, 2009 through March, 2014. The group included 25 culture negative patients and 14 culture positive patients and all of them underwent operative irrigation and debridement without preoperative antibiotic administration. Preoperative serologic parameters including WBC count, percentages of neutrophil, ESR, and CRP were collected. Preoperative synovial parameters including WBC count, percentages of polymorphonuclear (PMN) cell, protein, glucose, chloride, lactate dehydrogenase (LDH), amylase, lipase, and creatinine were also collected for each patient and the laboratory data were reported as the average and standard deviation. A paired t test was used to compare variables between culture positive and culture negative groups. Statistical analysis was performed using SPSS (version 18.0, Chicago, IL) with a confidence interval of 95% and the statistically significant p-value was set to less than 0.05.

RESULTS
Synovial glucose value and synovial (LDH) value were statistically significant variable between the culture positive group and the culture negative group. Mean synovial glucose level of the culture negative group was 115.8±104.6 mg/dL, and mean synovial glucose level of culture positive group was 32.1±48.4 mg/dL. (p: 0.008) The ratio between synovial glucose and serum glucose of all the patients were also calculated. The ratio of synovial glucose to serum glucose was 0.77 in the culture negative group and 0.29 in the culture positive group, respectively. Mean synovial LDH level of culture negative group was 1628.3±1657.4 U/L, and mean synovial LDH level of culture positive group was 9538.3±12600.01 U/L. (p: 0.036) However, all of the other parameters showed no statistically significant difference between two groups. Culture positive group showed higher synovial LDH levels and lower synovial glucose levels than culture negative group.

CONCLUSION
Synovial glucose value and synovial LDH value were significant markers in differentiating septic arthritis from culture

negative, noninfectious arthritis in this retrospective study.