Paper #34

Cell Count and Differential of Aspirated Fluid in Immunosuppressed Patients in the Diagnosis of Total Knee Arthroplasty Prosthetic Joint Infections: A Case Series

David W. Fitz, MD, Cort D. Lawton, MD, Bennet A. Butler, MD, Daniel Li, BS, Earvin S. Balderama, PhD, Michael D. Stover, MD

Introduction: Prosthetic joint infection (PJI) is a deleterious complication of total knee arthroplasty (TKA). A mainstay of diagnosing PJI is the synovial aspirate. While the Musculoskeletal Infection Society (MSIS) has provided cutoff values for synovial leukocyte count and neutrophil percentage, it is unknown if these values are valid in patients with compromised immune systems. We sought to assess whether the accepted cutoff values for synovial leukocyte count and neutrophil percentage are valid in targeted immunosuppressed individuals.

Methods: We retrospectively analyzed synovial aspirates from 17 patients who had previously undergone a TKA and had one of a number of targeted diagnoses indicative of immunosuppression; 5 were found to be infected, 12 were not. Sensitivity, specificity, positive predictive value, and negative predictive value were calculated using the MSIS cutoff values as well as various combinations with serum erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP).

Results: The median synovial fluid leukocyte count (26,000 compared with 314 cells/10-3cm3; p <0.001) and neutrophil percentage (84% compared to 26%; p=0.002) were significantly higher in patients with PJI. Applying the defined cutoff value for leukocyte count (>1100 cells/10-3cm3) and neutrophil percentage (>64%) to our cohort, we found identical sensitivities and specificities of 100% (95% confidence interval, 56.6% to 100%) and 83.3% (95% confidence interval, 55.2% to 95.3), respectively.

Conclusion: The present study suggests that a synovial fluid cell count of >1100 cells/10-3cm3 and a neutrophil percentage >64% are adequate cutoff values to differentiate between TKA with and without infection in targeted immunosuppressed individuals.

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