



Paper #32

Premature Antibiotic Treatment can Potentially Compromise the Diagnosis of PJI

Ali Sina Shahi, MD, Carl A. Deirmengian, MD, Antonia F. Chen, MD, MBA, Carlos A. Higuera, MD, Camilo Restrepo, MD, Benjamin Zmistowski, MD, Javad Parvizi, MD, FRCS, Krystal Golankiewicz, BA

Introduction: The diagnosis of PJI has been a challenge to orthopaedic surgeons due to often ambiguous or discordant laboratory results. When antibiotic treatment has been initiated before testing for PJI, there is additional concern that the laboratory results could be misleading. In the current study we aimed to determine if antibiotic treatment before laboratory testing for PJI affects laboratory values.

Methods: A retrospective multi-institutional study was conducted to evaluate the synovial fluid (SF) and serum analysis of PJI patients (MSIS classification), comparing patients who did and did not receive antibiotics prior to testing. The SF PMN%, and serum ESR and CRP, and culture results were compared. The one-tailed Fisher's exact test was used to determine if antibiotic administration is associated with higher rates of false positive.

Results: 50 PJI patients treated with antibiotics prior to laboratory testing were compared with 110 PJI cases that did not receive antibiotics. Our results demonstrated that the rate of positive SF and tissue cultures was significantly lower in PJI patients treated with antibiotics (73% vs. 87%; $p=0.033$). Although underpowered, PJI cases on antibiotics trended toward higher rates of false negative in ESR (6% vs. 12.5%; $p=0.17$), CRP (10% vs. 14.63%; $p=0.30$), and PMN% (9% vs. 18.37%; $p=0.093$) in comparison with those who did not received antibiotics.

Conclusion: The standard synovial fluid and serum tests for PJI can be affected by premature antibiotic treatment. Patients treated with antibiotics before appropriate testing demonstrated a statistically significant increase in false-negative cultures, and a trend toward increased false-negative results for other laboratory results. In conclusion Antibiotic use prior to lab analysis can increase the likelihood of overlooking patients with PJI. Future studies with greater number of patients are suggested.
