Does An Isolated Elevated ESR Value Warrant Further Work-up for Periprosthetic Joint Infection Following Total Knee Arthroplasty?

Alexander Duke, Muhammad A Haider, Zoe Alpert¹, Braden Vincent Saba¹, Vinay Aggarwal, Ran Schwarzkopf², Matthew Stewart Hepinstall³

¹NYU Langone Orthopedic Hospital, ²NYU Langone Orthopedic Hospital, Hospital For Joi, ³NYU Langone Orthopedics INTRODUCTION:

Serum erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) are standard screening for suspected periprosthetic joint infection (PJI) following total knee arthroplasty (TKA). Likelihood of PJI is high when both are elevated, warranting further evaluation. It is less clear whether the common result of an elevated ESR with normal CRP routinely benefits from further testing. The aim of this study was to investigate the incidence of PJI with an elevated ESR but normal CRP.

METHODS:

A retrospective cohort study at a single academic center identified 656 TKA patients between March 2012 and March 2023 who subsequently had an elevated ESR (>30 mm/hr) and a normal CRP (<10 mg/L) at least 90 days after surgery. Chart review confirmed diagnosis of PJI as well as whether laboratory results were obtained prior or subsequent to initiation of PJI treatment.

RESULTS:

Overall, 20 out of 656 (3.0%) patients were diagnosed with PJI. The date of testing with a normal CRP and an elevated ESR was after the initiation of surgical treatment of PJI in 14 of these cases; these cases had elevated CRP or other findings that proved infection such as a draining sinus prior to treatment initiation. After excluding these cases, we determined that 6 of 642 (0.9%) primary TKA cases with an elevated ESR and a normal CRP were subsequently found to be infected. Of these 6 cases, 5 (83.3%) showed chronic symptoms suggesting infection.

DISCUSSION AND CONCLUSION:

Isolated elevated ESR following TKA does not associate with a high risk of PJI when CRP is normal. Therefore, isolated elevation of ESR does not mandate further work-up for PJI; clinical context should guide further testing decisions. Surgeons can utilize this data to better inform diagnostic evaluation of TKA patients undergoing laboratory testing to evaluate for PJI.