The James A. Rand Young Investigator's Award

Keeping It Simple: Are All MSIS Tests Useful to Diagnose Periprosthetic Joint Infection?

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Introduction: Current data evaluating the clinical value and cost-effectiveness of advanced diagnostic tests for periprosthetic joint infection (PJI) diagnosis, including alpha-defensin and synovial C-reactive protein (CRP), is conflicting. This study aimed to evaluate the adequacy of preoperative and intraoperative PJI workup without the utilization of these tests.

Methods: This retrospective analysis identified all patients who underwent revision THA or TKA for suspected PJI between 2018 and 2020 and had a minimum follow-up of two years. Perioperative data and lab results were collected, and cases were dichotomized based on whether they met the 2018 Musculoskeletal Infection Society (MSIS) criteria for PJI. In total, 204 rTKA and 158 rTHA cases suspected for PJI were reviewed.

Results: Nearly 100% of the cases were categorized as "infected" for meeting the 2018 MSIS criteria without utilization of alpha-defensin or synovial CRP (rTKA: n=193, 94.6%; rTHA: n=156, 98.7%). Most cases were classified as PJI preoperatively by meeting either the major MSIS or by a combinational minor MSIS criteria of traditional lab tests (rTKA: n=177, 86.8%; rTHA: 143, 90.5%). A subset of cases was classified as PJI by meeting combinational preoperative and intraoperative MSIS criteria (rTKA: 16, 7.8%; rTHA: 13, 8.2%). Only 3.6% of all cases were considered "inconclusive" using preoperative and intraoperative data.

Conclusion: Given the high rate of cases satisfying PJI criteria during preoperative workup using our available tests, the synovial alpha-defensin and synovial CRP tests may not be necessary in the routine diagnostic workup of PJI. We suggest that the primary PJI workup process should be based on a stepwise algorithmic approach with the most economical testing necessary to determine a diagnosis first. The use of advanced, commercialized and costly biomarkers should be utilized only when traditional testing is indeterminate.

Notes