



The Alpha-defensin Test for PJI is Not Affected by Prior Antibiotic Administration

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Introduction: Previous studies have demonstrated that the administration of oral antibiotics to patients prior to performing diagnostic testing for PJI can interfere with the accuracy of test results. The purpose of the current study is to evaluate the effects of antibiotic administration prior to performing the alpha-defensin test for PJI.

Methods: Four institutions contributed prospective data, which included 106 hip and knee arthroplasties with MSIS- defined PJI. All patients also had an alpha-defensin test performed. Patients in one group (A) (28%) were on antibiotics prior to the diagnostic work-up, whereas patients in another group (B) (72%) were never given antibiotics before the diagnostic work-up. The alpha-defensin test result (S/CO), ESR (mm/h), serum CRP (mg/L), synovial leukocyte counts (cells/ul), and neutrophil percentage (%) were collected and compared between the two groups.

Results: The administration of antibiotics before performing the alpha-defensin test for PJI did not have a significant influence on the median alpha-defensin level (4.2 vs. 4.9, $p=0.45$). There was only one false-negative alpha-defensin result, found in group (B), among the 106 PJIs. Conversely, the median serum CRP (26 vs. 62, $p=0.008$), synovial fluid leukocyte count (17,300 vs. 29,400, $p=0.008$), and synovial neutrophil percentage (87% vs. 92%, $p=0.034$) were all significantly lower for patients in Group A. Furthermore, the combined percentage of false-negative results for these traditional tests among group (A), was greater than the percentage of false-negative results in group (B) (20% vs. 12%; $p=0.01$).

Conclusion: This, and previous studies, have demonstrated that premature antibiotics can compromise the results of traditional diagnostic tests for PJI, causing lower median results and significant increases in false-negative results. However, the alpha-defensin test for PJI maintains its performance even in the setting of antibiotic administration. Considering that many patients receive antibiotics prior to a diagnostic work-up for PJI, alpha-defensin testing should be considered as a standard test for PJI.