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LETTER TO THE EDITOR

Evaluation of interleukin-6 in synovial fluid in periprosthetic joint infection of the elbow

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To the Editor:

We read with great interest the recent article by Krane et al., titled "Evaluation of Interleukin-6 in Synovial Fluid in Periprosthetic Joint Infection of the Elbow" [1]. This study makes a valuable contribution to the field, particularly in advancing diagnostic tools for periprosthetic elbow infection (PEI). The findings suggest that IL-6 represents a significant improvement over current diagnostic markers, such as C-reactive protein (CRP) and white blood cell counts (WBC), which have shown limited reliability in detecting infections in elbow arthroplasties. The clinical implications of using IL-6 as a biomarker for PEI are promising. Early and accurate identification of infections can lead to better management strategies, potentially reducing the need for multiple surgeries and associated costs. Furthermore, the study's methodology—utilizing synovial fluid collected during surgery for immediate IL-6 analysis—presents a practical approach for intraoperative decision-making. This could greatly assist in distinguishing between one-stage and two-stage revision procedures, ultimately improving patient outcomes.

However, there are several issues that researchers should consider in future studies. First, despite its high sensitivity, the specificity of IL-6 (63.64%, as reported in the study) for diagnosing PEI is moderate, which raises the risk of false-positive results. This could lead to unnecessary treatments or surgeries, particularly if IL-6 is used as the sole diagnostic tool. A systematic review and meta-analysis has shown that the sensitivity and specificity of D-dimer (0.82 and 0.72, respectively) and IL-6 (0.80 and 0.89, respectively) for diagnosing periprosthetic joint infection (PJI) were lower than those of α-defensin [2]. Thus, the authors recommended testing α-defensin for diagnosing PJI [2]. In the future, combining IL-6 with other cytokines may offer a more comprehensive approach to diagnosing PEI. Second, the study indicates that there is no histopathological correlation for IL-6 levels, which may limit its reliability in certain clinical contexts [3]. Without histological confirmation, the interpretation of elevated IL-6 levels can be challenging, especially in complex cases with multiple underlying conditions. Third, the diagnostic accuracy of IL-6 may vary depending on the specific joint involved, patient population, and other clinical factors. This variability highlights the need to establish joint-specific and context-specific cut-off values for IL-6, which will require further research and validation.

Overall, the study by Krane et al. lays the groundwork for future investigations into more precise and rapid diagnostic tools for PEI. I commend the authors for their innovative approach and encourage continued research in this important area.

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