[O34] SYNOVIAL CALPROTECTIN; A RAPID TEST TO DIAGNOSE A PROSTHETIC JOINT INFECTION

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Introduction: In the last couple of years, several synovial biomarkers have been introduced in the diagnostic algorithm for a prosthetic joint infection (PJI). Alpha defensin-1 proved to be one of the most promising, with a high sensitivity and specificity. However, a major disadvantage of this biomarker are the high costs. Calprotectin is a protein that is present in the cytoplasm of neutrophils, and is released upon neutrophil activation. Its value has been established for decades as a (fecal) marker for inflammatory bowel disease.

Aim: To determine the efficacy of synovial calprotectin in the diagnosis of a prosthetic joint infection.

Methods: We prospectively collected synovial fluid (from hip, knee and shoulder) from patients with a proven PJI (n=15) and from patients that underwent a revision surgery without signs of a PJI (n=19). Patients with an active rheumatoid arthritis and/or gout were excluded from the study. Synovial fluid was centrifuged and the supernatant was used to measure calprotectin, by using a rapid, point of care test. This test was validated for synovial fluid analysis of calprotectin using an ELISA. A Mann-Whitney U test was used to calculate the difference between both patient groups.

Results: The median calprotectin level was 899 mg/L (range 28-2120) for PJI versus 22 mg/L (range 0-202) for controls ($p < 0.0001$). With a cut-off value of 50 mg/L, synovial calprotectin has a high sensitivity of 93%, and a specificity of 84%. The positive and negative predictive values are 82% and 94%, respectively.

Conclusions: Synovial calprotectin is a potentially valuable biomarker in the diagnosis of a PJI. With a point of care test, a rapid quantative diagnosis can be made within the operating room (results are obtained within 20 minutes), and could help in the decision making process to reimplant a prosthesis in an one stage procedure. In comparison to the currently available test (to measure alpha defensin-1), the measurement of calprotectin test is much cheaper (500 euro versus 20 euro per sample) and easily to implement in hospitals where this test is already available. Its diagnostic efficacy for exclusively low-grade PJI should be further elaborated.