Presence of IL-17 in synovial fluid identifies a potential inflammatory osteoarthritic phenotype

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PURPOSE
Osteoarthritis (OA) is a common and heterogeneous arthritic disorder. Patients suffer pain and their joints are characterized by articular cartilage loss and osteophyte formation. Risk factors for OA include age and obesity with inflammation identified as a key mediator of disease pathogenesis. Interleukin-17A (IL-17) is a pro-inflammatory cytokine that has been implicated in inflammatory diseases such as rheumatoid arthritis. IL-17 can upregulate expression of inflammatory cytokines and adipocytokines. The aim of this study was to evaluate IL-17 levels in the synovial fluid of patients with end-stage knee and hip OA in relation to inflammation- and pain-related cytokines and adipocytokines in synovial fluid and serum, and clinical and radiographic disease parameters.

METHODS
This is a cross-sectional study of 152 patients undergoing total hip and knee arthroplasty for OA. IL-17, IL-6, leptin, adiponectin, visfatin, resistin, C-C Motif Chemokine Ligand 2 (CCL2), C-C Motif Chemokine Ligand 7 (CCL7) and nerve growth factor (NGF) protein levels were measured in synovial fluid and serum using enzyme-linked immunosorbent assay (ELISA). Baseline characteristics included age, sex, body mass index, co-morbidities, pain and function, and radiographic analyses (OA features, K&L grade, minimal joint space width).

RESULTS
14 patients (9.2%) had detectable IL-17 in synovial fluid. These patients had significantly higher median concentrations of IL-6, leptin, resistin, CCL7 and NGF. Osteophytes, sclerosis and minimum joint space width were significantly reduced in patients with detectable IL-17 in synovial fluid. No differences were found in pain, function and comorbidities. IL-17 concentrations in synovial fluid and serum were moderately correlated (r = 0.482).

CONCLUSION
The presence of IL-17 in the synovial fluid therefore identifies a substantial subset of primary end-stage OA patients with distinct biological and clinical features. Stratification of patients on the basis of IL-17 may identify those

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responsive to therapeutic targeting.

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