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**BILATERAL 3.0-TESLA MRI OF THE HAND AND WRIST IN EARLY AND VERY EARLY INFLAMMATORY ARTHRITIS: TENOSYNOVITIS IS ASSOCIATED WITH PROGRESSION TO RHEUMATOID ARTHRITIS**

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**Objectives** To identify bilateral hand and wrist high field strength 3.0 Tesla MRI (3-T MRI) findings of synovial inflammation that are associated with progression to rheumatoid arthritis (RA) in a very early arthritis cohort and in an early arthritis cohort.

**Materials and methods** Thirty-five patients (32 women, three men; mean age 45 years) with untreated recent-onset inflammatory arthritis participated in this prospective study and were examined using a new MRI approach including both wrists and hands. MRI scoring included the quantification of synovitis in multiple joints and tendons of the hands and wrist. All of these territories were considered for symmetry evaluation. Possible associations between synovitis for each joint and tendon and for each group of joints and tendons and RA diagnosis at 12 months were tested by univariate logistic regression analysis.

**Results** Tenosynovitis of the flexor tendons of the second finger (OR, 14.61) and of the extensor carpi ulnaris (OR, 3.21) in the very early RA group (VERA, disease duration <3 months) and tenosynovitis of the flexor tendons of the second finger (OR, 9.60) and synovitis of the radioulnar joint (OR, 8.79) in the early RA group (ERA, disease duration <12 months) were the MRI findings most significantly associated with progression to RA ( $p < 0.05$ ). Joint and tendon analysis by group revealed that tenosynovitis of the flexor tendons (OR, 4.28) was the most significantly associated with progression to RA in the VERA group ( $p < 0.05$ ). Asymmetry was found in 80.0% and 69.3% of joint or tendon pairs of VERA and ERA patients, respectively.

**Conclusion** Tenosynovitis is a major pathological finding in early RA. Furthermore high-field-strength MRI identifies early RA as an asymmetrical disease, confirming the importance of a bilateral acquisition protocol.