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Circulating miR-99b-5p is A Marker of Inflammation and Structural Damage on MRI in Early Rheumatoid Arthritis

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Introduction

Expression of several miRNAs occurs in the plasma and synovial fluid of patients with established rheumatoid arthritis (RA). We found that microRNA-143-3p (miR-143-3p), miR-145-5p, and miR-99b-5p expression was associated with greater erosion volume in early RA (ERA). Whether these miRNAs are associated with bone erosion and joint inflammation on magnetic resonance imaging (MRI) is unknown.

Objectives

To determine whether plasma cell-free circulating miRNAs are associated with (a) bone erosion and (b) inflammation severity on MRI in patients with ERA.

Methodology

66 ERA patients were recruited at presentation for this cross-sectional study. 60 of these 66 patients (90.9%) were treatment nave. MRI of the most severely affected wrist was performed in all patients. The degree of bone damage (i.e. erosions), bone inflammation (osteitis) and soft tissue inflammation (synovitis / tenosynovitis) was scored on MRI (a) semi-quantitatively using the Rheumatoid Arthritis MRI score (RAMRIS) for scoring the severity of erosions, bone marrow oedema, synovitis and tenosynovitis; and (b) quantitatively by measuring synovial and tenosynovial volume (mm³). The three most dysregulated miRNAs (miR-143-3p, miR-145-5p and miR-99b-5p) identified in our previous ERA study were validated by TaqMan qRT-PCR in all patients.

Result

Expression of miR-99b-5p was higher in ERA patients with erosions (1.280.61) on MRI than those without erosions (0.230.43, P