Table 1. Correlations between a) BL RAMRIS and BL RAMRIQ tenosynovitis and CIS vs BL DAS28-4(CRP) (N=109) and b) Δ RAMRIS and Δ RAMRIQ tenosynovitis and CIS at M12 vs Δ DAS28-4(CRP) at M12 (N=73) across treatment arms^a

a) BL DAS28-4(CRP)			b) Δ DAS28-4(CRP)		
BL imaging feature	Correlation	p value	Δ Imaging feature	Correlation	p value
RAMRIS	0.366	0.0001	RAMRIS	0.531	<0.0001
tenosynovitis			tenosynovitis		
RAMRIS CIS	0.399	<0.0001	RAMRIS CIS	0.554	<0.0001
RAMRIQ	0.205	0.037	RAMRIQ	0.543	<0.0001
tenosynovitis			tenosynovitis		
RAMRIQ CIS	0.180	0.062	RAMRIQ CIS	0.564	<0.0001

^aData were pooled across the tofacitinib 10 mg BID $\pm$ MTX and MTX monotherapy arms. Spearman's rank correlation coefficients and p values were calculated for associations between RAMRIS and RAMRIQ parameters and DAS28-4(CRP); tenosynovitis and CIS were assessed using combined data from metacarpophalangeal and wrist joints; CIS is the sum of synovitis, BME and tenosynovitis values; Δ , change from BL; N, number of pts with values at BL/timepoint of interest

Conclusion: Responsiveness of RAMRIS and RAMRIQ tenosynovitis and CIS was demonstrated with significant improvements through M12 in pts receiving tofacitinib 10 mg BID $\pm$ MTX vs MTX. Construct validity for RAMRIS and RAMRIQ tenosynovitis and CIS was evident from correlations with DAS28-4(CRP). Further work is needed to validate these novel imaging biomarkers in terms of relative responsiveness and prediction of later structural progression.

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DIAGNOSTIC VALUE OF HIGH-RESOLUTION PERIPHERAL QUANTITATIVE COMPUTED TOMOGRAPHY COMPARED TO CONVENTIONAL RADIOGRAPHY FOR DETECTING EROSIVE DISEASE IN RHEUMATOID ARTHRITIS

R. Klose-Jensen^{1,2}, J. Therkildsen^{1,2}, A. B. Blavnsfeldt¹, B. Langdahl³, K. K. Keller², E. M. Hauge^{1,2}. ¹Aarhus University Hospital, Department of Rheumatology, Aarhus N, Denmark; ²Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark; ³Aarhus University Hospital, Department of Endocrinology and Internal Medicine, Aarhus N, Denmark

Background: Conventional radiography (CR) of the hands, wrists and feet is currently the gold standard for assessing erosive damage in patients with rheumatoid arthritis (RA). However, CR is prone to relatively low resolution and projection superimposition due to 2-dimensional imaging. Therefore, CR might not detect erosive disease in RA patients. High-resolution peripheral quantitative computed tomography (HR-pQCT) is an imaging modality with superior resolution (82 μ m³) to all other imaging modalities in vivo. However, HR-pQCT imaging is limited by a smaller field of view. Therefore, it needs to be illuminated, whether the higher resolution of HR-pQCT imaging is

sufficient for diagnosing erosive disease in patients with RA despite the limited field of view.

Objectives: The objective was to investigate whether High-Resolution peripheral Quantitative Computed Tomography (HR-pQCT) of just two metacarpophalangeal (MCP) joints can diagnose more patients having erosive RA than conventional radiography (CR) of 44 joints in the hands, wrist and feet.

Methods: In this single-centre cross-sectional study. Patients with established RA (disease duration $\geq$ 5 years) were investigated by HR-pQCT and CR. The second and third MCP joints of the dominant hand were assessed for erosions by HR-pQCT. CR in the hands, wrist and feet were scored according to the Sharp/van der Heijde (SHS) method.

Results: Three hundred fifty-four patients were included. By CR, 67 (18.9%) patients were classified with non-erosive RA, and 287 (81.1%) with erosive RA. In the 67 patients with non-erosive RA, 47 patients (70.1%) had erosions in the second and third MCP joints by HR-pQCT (Figure 1). We found an agreement between CR and HR-pQCT for 274 (77.4%) of the patients. The sensitivity and specificity (95%CI) of HR-pQCT for diagnosing erosive RA when CR of hands, wrist and feet were used as the reference was 89% (84 – 92) % and 30% (19 – 42) %, respectively. Using HR-pQCT for two MCP joints as the reference, the sensitivity and specificity of CR of hands, wrist and feet for diagnosing erosive RA were 84% (80 – 88) % and 38% (25 – 52) %, respectively. The McNemar's χ^2 test for diagnosing patients having erosive RA between the two modalities was 2.45, p = 0.146.

Conclusion: HR-pQCT imaging identifies erosions which are not seen by CR. Using HR-pQCT at of the second and third MCP joint reclassified a substantial number of patients as having erosive RA compared to their non-erosive state determined by CR. The sensitivity and specificity of diagnosing patients having erosive RA using HR-pQCT from only two fingers were not statistically different from CR of 44 joints, in the hands, wrist and feet.

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