MACE event. Compared with the QQ genotype, the RR genotype had a highly significant positive association with BL paraoxonase activity, and a highly significant negative association with BL lactonase and arylesterase activity (Table 1). A univariate analysis identified several BL covariates significantly associated with risk of MACE (Figure 1a). Time-varying models found a highly significant association of increased paraoxonase activity over time with lower risk of future MACE, even after controlling for low-density lipoprotein or HDL cholesterol levels, and other traditional cardiovascular (CV) risk factors identified in univariate analysis (Figure 1b), with similar findings for lactonase and arylesterase (data not shown).

Table 1. Effect of PON1 genotype (RR vs QQ) on BL enzyme activity

<table>
<thead>
<tr>
<th>Enzyme</th>
<th>n</th>
<th>Estimate</th>
<th>95% CI</th>
<th>p value</th>
<th>Cochran’s Q test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraoxonase</td>
<td>1229</td>
<td>1.035</td>
<td>0.93, 1.141</td>
<td>&lt;0.0001</td>
<td>0.209</td>
</tr>
<tr>
<td>Lactonase</td>
<td>1188</td>
<td>-0.375</td>
<td>-0.505, -0.246</td>
<td>&lt;0.0001</td>
<td>0.025</td>
</tr>
<tr>
<td>Arylesterase</td>
<td>1231</td>
<td>-1.016</td>
<td>-1.382, -0.649</td>
<td>&lt;0.0001</td>
<td>0.251</td>
</tr>
</tbody>
</table>

Fixed-effects model; estimate >0 favours RR genotype and <0 favours QQ genotype

REFERENCES:

CV risk in pts with RA is warranted. Further investigation of PON1 as a novel functional lipid biomarker to assess risk of MACE event, even after controlling for low-density lipoprotein or HDL cholesterol levels, and other traditional cardiovascular (CV) risk factors identified in univariate analysis (Figure 1b), with similar findings for lactonase and arylesterase (data not shown).

**Background:** Magnetic resonance imaging (MRI) trial outcomes have largely focused on synovitis, bone marrow oedema (BME) and erosions. Tenosynovitis is a common manifestation of rheumatoid arthritis (RA), but is relatively understudied; a combined inflammation score (CIS) summing synovitis, BME and tenosynovitis may be a highly responsive measure. We previously showed the responsiveness of the Outcome Measures in Rheumatology (OMERACT) RA MRI scoring system (RAMRIS) and a machine-learning derived automated tool (RAMRIQ) in a randomised controlled trial (RCT) of tocilizumab and methotrexate (MTX) in MTX-naive patients (pts) with early RA.¹

**Objectives:** This post hoc analysis assessed the impact of tocilizumab + MTX on MRI tenosynovitis and CIS in pts with early RA using semiquantitative and quantitative MRI outcomes.

**Methods:** Study A3921068 (NCT01164579), a 1-year, exploratory, Phase 2, RCT, compared tocilizumab 10mg daily (BID) + MTX, and MTX monotherapy, in MTX-naive pts with early RA.² MRI of unilateral wrist and metacarpophalangeal joints was performed at screening/baseline (BL) and Months (M) 1/3/6/12. MRI tenosynovitis and CIS were assessed using RAMRIS and RAMRIQ. Changes from BL (A) in RAMRIS and RAMRIQ tenosynovitis and CIS were evaluated at M1/3/6/12. Data were assessed using a mixed-effect model for repeated measures, with treatment arms as factors and BL values as covariates. Using Spearman’s rank correlation coefficients were calculated for associations between BL RAMRIS and BL RAMRIQ tenosynovitis and CIS vs BL Disease Activity Score in 28 joints, C-reactive protein (DAS28-4(CRP)), and ΔRAMRIS and ΔRAMRIQ tenosynovitis and CIS at M12 vs ΔDAS28-4(CRP) at M12.

**Results:** In total, 109 pts were randomised and treated. ΔRAMRIS and ΔRAMRIQ tenosynovitis and CIS were generally significantly greater at M3/6/12 in pts receiving tocilizumab ± MTX vs MTX, while ΔRAMRIS CIS was also significantly greater at M1 (Figure 1). Compared with RAMRIS, RAMRIQ outcomes were generally more responsive to treatment with tocilizumab ± MTX. Significant correlations were seen between BL RAMRIS and BL RAMRIQ tenosynovitis and CIS vs BL DAS28-4(CRP), and between ΔRAMRIS and ΔRAMRIQ tenosynovitis and CIS at M12 vs ΔDAS28-4(CRP) at M12 (Table 1). In general, stronger correlations were seen between BL DAS28-4(CRP) and BL RAMRIS vs BL RAMRIQ parameters, while correlations were similar between ΔDAS28-4(CRP) at M12 and ΔRAMRIS and ΔRAMRIQ parameters at M12.

**Conclusion:** Higher activity of the HDL-associated protein PON1 over time was associated with a significantly reduced risk of future MACE in pts with RA receiving tofacitinib, after controlling for traditional CV risk factors and cholesterol level.

**REFERENCES:**


**DOI:** 10.1136/annrheumdis-2021-eular.363

**Scientific Abstracts**
Table 1. Correlations between a) BL RAMRIS and BL RAMRIQ tenosynovitis and CIS vs BL DAS28-4(CRP) (N=108) and b) ∆RAMRIS and ∆RAMRIQ tenosynovitis and CIS at M12 vs ∆DAS28-4(CRP) at M12 (N=73) across treatment arms¹

<table>
<thead>
<tr>
<th>Imaging Feature</th>
<th>a) Correlation Values</th>
<th>b) Correlation Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAMRIS</td>
<td>0.366 0.001</td>
<td>RAMRIS</td>
</tr>
<tr>
<td>tenosynovitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAMRIQ</td>
<td>0.399 &lt;0.001</td>
<td>RAMRIQ</td>
</tr>
<tr>
<td>CIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAMRIS</td>
<td>0.205 0.037</td>
<td>RAMRIS</td>
</tr>
<tr>
<td>tenosynovitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAMRIQ</td>
<td>0.180 0.062</td>
<td>RAMRIQ</td>
</tr>
</tbody>
</table>

¹Data were pooled across the tofacitinib 10 mg BID ± MTX and MTX monotherapy arms. Spearman's rank correlation coefficients and p values were calculated for associations between RAMRIS and RAMRIQ tenosynovitis and CIS and with 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, change from BL. N, number of pts with values at BL/timepoint.

Conclusion: Responsiveness of RAMRIS and RAMRIQ tenosynovitis and CIS was demonstrated with significant improvements through M12 in pts receiving tofacitinib 10 mg BID 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.

REFERENCES:

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DOI: 10.1136/annrheumdis-2021-eular.364

POSO444

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

R. Klöse-Jensen1,2, J. Therkildsen1,2, A. B. Blavnsfeldt1, B. Langdah1, K. K. Keller7, F. E. Hauge1,2, 3Aarhus University Hospital, Department of Rheumatology, Aarhus N, Denmark; 2Aarhus University Hospital, 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 (82μm³) 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 ≥ 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 was 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 z² 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 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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Disclosure of Interests: Rasmus Klöse-Jensen: None declared, Josephine Therkildsen: None declared, Anne-Birgitte Blavnsfeldt: None declared, Bente