Figure 1 The prevalence and concordance between inflammation detected by MRI and physical examination in various proximal interphalangeal joints (PIPs) of early RA patients. **A:** The prevalence of joint tenderness, MRI tenosynovitis, synovitis and osteitis per PIP. **B:** Generalized Estimating Equations with multivariate logistic regression were used to show the contribution of MRI tenosynovitis, synovitis and osteitis to joint tenderness or swelling. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Conclusion: This preliminary study showed MRI-detected digit flexor tenosynovitis in bilateral PIPJs contributed to joint tenderness in early RA patients independently of synovitis which should not be ignored in clinical practice.

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FRI0624

U9: A NOVEL CLINICALLY ORIENTED ULTRASONOGRAPHIC SCALE FOR ASSESSING DISEASE ACTIVITY IN RHEUMATOID ARTHRITIS

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Background: Musculoskeletal Ultrasonography (MSUS) is now a widely used tool for the monitoring of rheumatoid arthritis (RA). Although there are many proposed sets of composite scores, a fixed set of joints may not be an ideal tool to assess a disease like RA which affects many joints and tendons in different presentations.

Objectives: To assess the correlation of 3 proposed ultrasonographic composite scores with disease activity indices.

Methods: Three different composite scores were proposed by the first author, the first score (modified U8 score) which included bilateral wrists, 2nd MCP, 3rd MCP and knees which of the same set of joints proposed by Yoshimi et al 2015 with a modification of scoring of each joint according to EULAR/OMERACT combined score so the range of scores (0-24). The second score (U9) was the same of the modified U8 score plus scoring the most clinically affected joint or tendon (one joint or one tendon) so the range of score (0-27). The third proposed score (8+2) was the same of the modified U8 score plus scoring the 2 most clinically affected joint or tendon (one joint and one tendon or 2 joints or 2 tendons) so the range of score (0-30). All targeted joints were evaluated by grey-scale (GS) and power Doppler (PD) ultrasound using EULAR/OMERACT combined score (0-3). Targeted tendons were scored (0-3) by either -scale (GS) and power Doppler (PD) ultrasound and the highest score was used.

One hundred and fifty four RA patients diagnosed according to ACR/EULAR criteria were recruited for the present study. A total of 154 patients with RA were included. Disease activity was assessed by clinical disease activity indices (CDAI and DAS28 ESR). Functional status was assessed by health assessment questionnaire (HAQ).

Results: In the cross-sectional cohort with 154 patients, correlation between the modified (U8) score and clinical disease activity parameters (CDAI and DAS28) was significant but modest ($r=0.3$, $P=0.03$ and $r=0.4$, $P=0.01$) respectively. The same was true for the (U 8+2 score) ($r = 0.41$, $P = 0.0001$, $r=0.4$, $P=0.005$). The 8+1 (U9 score) gave the best positive correlation with CDAI and DAS28 ($r=0.7$, $P<0.001$, $r=0.6$, $P<0.001$) respectively.

HAQ was highly correlated with U9 score ($r=0.7$, $P<0.001$) and moderately correlated with U8+2 score ($r=0.3$, $P=0.05$) and not correlated with the modified 8 score.

Conclusion: The U9 score gave the best correlation with disease activity parameters. It is simple and applicable and gives a high degree of flexibility to the sonographer according to the clinical picture.

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FRI0625

ASSESSING SYNOVITIS IN PATIENTS WITH RHEUMATOID ARTHRITIS BY ULTRASOUND – AN AGREEMENT STUDY EXPLORING THE MOST ACTIVE SIDE

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Background: Though ultrasound examination of all RA patients - if offered a very tight clinical control - may not be necessary for obtaining clinical remission (1,2), there are still patients where ultrasound may have a role in monitoring disease activity. Scoring synovitis unilaterally will by far reduce the examination time, however, no consensus exists on how to choose the side to be examined and if one side per se is always the most inflamed side.

Objectives: To assess ultrasound (US) inflammation and sensitivity to change in hands, aiming to identify if the right hand, the dominant hand, or the hand with more clinically swollen joints (SwJ) is per se the most inflamed and more sensitive to change, and hence the preferred side for unilateral scoring of synovitis by US in rheumatoid arthritis (RA) patients.

Methods: This is an agreement study exploring the impact on US scoring methods in a longitudinal study of early RA (ARCTIC trial, n=230) and established RA (ULRABIT trial, n=212) patients initiating conventional and biological Disease Modifying Anti-Rheumatic Drugs, respectively. Tender and swollen joint count for 28 joints (TJC28 and SJC28) and C-reactive protein (CRP mg/L) were obtained. Using the hands as model, bilateral MCP 1-5, PIP 2+3 and wrists were evaluated by US using a 0-3 scoring system for grey-scale (GS) and power Doppler (PD) US according to the atlas by Hammer et al. (3) GS sum score, PD sum score and global synovitis score (GLOESS) were calculated for each hand (0-30). According to our prespecified protocol a reasonable equivalence margin in this study (agreement between groups) was defined to correspond to a 95% Confidence Interval around the observed paired mean difference: -2.99 to +2.99.

Table					
Ultrasound inflammatory activity in the dominant hand versus non-dominant hand, in the hand with clinically more swollen joint versus less swollen joints and the right versus left hand using different ultrasound composite scores					
Baseline			Change values from baseline to 3 months		
GS sum score (0-30)	Doppler sum score (0-30)	GLOESS (0-30)	Δ GS sum score (0-30)	Δ Doppler sum score (0-30)	Δ GLOESS (0-30)
Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
*Dominant Hand (n=232)					
Dominant	7.70 (7.09 to 8.40)	4.81 (4.26 to 5.35)	5.07 (7.39 to 8.75)	-3.11 (-3.69 to -2.57)	-3.40 (-3.99 to -2.82)
Non-Dominant	7.08 (6.41 to 7.72)	4.22 (3.68 to 4.76)	7.28 (6.90 to 7.66)	-3.12 (-3.66 to -2.58)	-3.29 (-3.87 to -2.71)
Difference	-0.69 (-1.61 to 0.24)	-0.58 (-1.35 to 0.20)	-0.79 (-1.76 to 0.18)	0.005 (-0.76 to 0.75)	0.11 (-0.52 to 0.96)
P-value	0.13	0.14	0.11	0.99	0.79
*Clinical Hand (swollen joints) (n=314)					
Worst Clinical (lowest SJC)	5.51 (7.57 to 9.16)	5.37 (4.83 to 5.91)	8.83 (8.16 to 9.50)	-3.79 (-4.32 to -3.25)	-3.05 (-3.57 to -2.52)
Least Clinical (highest SJC)	6.30 (5.65 to 6.94)	3.66 (3.13 to 4.20)	6.52 (5.85 to 7.19)	-2.43 (-2.96 to -1.92)	-1.87 (-2.40 to -1.35)
Difference	-0.78 (-1.52 to -0.10)	-1.70 (-2.47 to -0.94)	-2.31 (-3.26 to -1.36)	1.34 (0.60 to 2.08)	1.17 (0.44 to 1.91)
P-value	<0.001	<0.001	<0.001	0.0004	0.002
*Hand side (n=437)					
Right side	7.70 (7.12 to 8.44)	4.82 (4.28 to 5.37)	6.12 (7.44 to 8.80)	-3.19 (-3.77 to -2.65)	-2.64 (-3.17 to -2.11)
Left side	7.08 (6.37 to 7.68)	4.21 (3.6 to 4.76)	7.23 (6.55 to 7.91)	-3.05 (-3.59 to -2.51)	-2.28 (-2.81 to -1.75)
Difference	-0.75 (-1.60 to -0.10)	-0.61 (-1.36 to -0.16)	-0.89 (-1.85 to -0.06)	0.14 (-0.61 to 0.89)	0.36 (-0.38 to 1.10)
P-value	0.11	0.12	0.07	0.71	0.49

*Analysed using a factor for the specific analysis, and trial (ARCTIC and ULRABIT, respectively) as a fixed effect, and the patient-ID was applied as a random effect