JOINT TENDERNESS AND ULTRASOUND MRI-DETECTED DIGIT FLEXOR TENOSYNOVITIS IN EARLY RHEUMATOID ARTHRITIS

Methods: DMARD-naïve RA patients with <2 years symptom duration from first swollen joint and indication for DMARD treatment were included in the ARCTIC trial (2). For the current analyses we used data from the baseline examination, including a tender joint count assessed by Ritchie Articular Index and a 44-swanen joint count. The Ritchie Articular Index treat certain joints as a single unit (as the MCP-joints), and scoring of tenderness in joints and joint groups is graded 0-3. All patients underwent an ultrasound examination of 34 joints, with a semi-quantitative 0-3 score for power Doppler in each joint. An ultrasound atlas was available for reference (3). We predefined the wrist and the MCP 1-5 joints as joint areas of interest since they are commonly involved in RA and were mended by RAMRIS so far.

Background: A tender joint count is part of most disease activity scores and remission criteria in rheumatoid arthritis (RA). A recent study found that tenderness in joints is a strong and independent risk factor of flare in remission RA. However, proximal interphalangeal joints (PIPJs) were scarcely evaluated by MRI, nor recommended by RAMRIS so far.

Objectives: To explore if tender non-swollen joints is associated with subclinical inflammation, assessed by ultrasound, in DMARD-naïve early RA patients.

Results: A total of 222 patients with complete baseline data were included. 63% were female, median [SD] age 53.6 [41.2, 62.3], symptom duration 5.8 [2.9, 10.4] months, swollen joint count 9 [4, 15], tender joint count 9 [4, 15], age 7 [4, 13] and power Doppler score 7 [3, 14]. Of 444 wrists, 268 were clinically non-swollen, and assessed the association between joint tenderness and ultrasound power Doppler signal by mixed logistic regression models with patient-specific intercept to adjust for within-patient dependencies. The analyses were repeated using generalized estimating equations for robustness. The frequency and odds ratio (OR) of ultrasound power Doppler activity (yes/no) in tender non-swollen wrists compared to non-tender non-swollen wrists were calculated. Similar analyses were performed for the MCP joints.

Background: A recent study found that tenderness in joints is a strong and independent risk factor of flare in remission RA. However, proximal interphalangeal joints (PIPJs) were scarcely evaluated by MRI, nor recommended by RAMRIS so far.

Objectives: To explore if the characteristics of MRI-detected inflammation in bilateral PIPJs in early RA patients and its clinical significance.

Methods: Early RA patients who fulfilled 2010 ACR/EULAR classification criteria with disease duration ≤1 year and DAS28-CRP ≥2.6 were recruited. New methodology of 3.0T whole-body MRI with contrast-enhanced imaging was used to scan bilateral hands simultaneously. MRI tenosynovitis, synovitis and osteitis were scored referring to the 2016 updated RAMRIS. Clinical data were collected.

Results: 1) Among 75 patients recruited, the median age was 49 years old (IQR: 38.59) with 71% female. The median disease duration was 7 months (IQR: 3.12) and the mean DAS28-CRP was 5.1 (IQR: 4.2-6.1).

Fourty-four patients (59%) were treatment-naïve who had never taken any DMARDs or glucocorticoids before recruitment. Both joint tenderness and swelling were present the most frequently in PIPJ2 and PIPJ3 (48% 61% and 43% 56%, respectively, Figure 1A.2) MRI tenosynovitis, synovitis and osteitis respectively were detected in 84%, 100% and 83% of the patients; respectively in 21% 44%, 43% 56% and 5% 11% of various PIPJs. There were 12% 30%, 28% 40%, and 2% 8% of PIPJ4 without tender or swollen showing MRI tenosynovitis, synovitis and osteitis respectively. When non-dominant hands were used as self-control, the frequency of digit flexor tenosynovitis in dominant hands was 18% higher than the non-dominant counterparts, indicating a potential impact of overuse on dominant tenosynovitis.

Tenosynovitis affects periarticular digit flexor tendon compartment and 65% 87% of tenosynovitis in PIPJs occurred together with digit flexor tenosynovitis, which was significantly more than those who showed MRI synovitis alone (21%, Chi-square test, p=0.017). Similar trend was found in tender PIPJ2 (45% vs. 26%, p<0.01). Generalized Estimating Equations with multivariate logistic regression showed not only MRI synovitis but also digit flexor tenosynovitis in bilateral PIPJs independently had more than twice probability of joint tenderness (both p<0.01, Figure 1B).

Disclosure of Interests: nina sundslater: None declared, Anna-Birgitta Aga Consultant for: UCB, AbbVie, and Pfizer, Paid instructor for: UCB, Hilde Berner Hammer Grant/research support from: AbbVie, Pfizer and Roche, Paid instructor for: AbbVie, Pfizer, UCB, Novartis, Roche, Speakers bureau: AbbVie, Pfizer, UCB, Novartis, Roche, Till Uhlig Consultant for: Grünenthal, Novartis, Speakers bureau: Grünenthal, Novartis, Tore K. Kvien Grant/research support from: AbbVie, BMS, MSD, Pfizer, Roche and UCB., Consultant for: AbbVie, Biogen, BMS, Boehringer Ingelheim, Celgene, Celltrion, Eli Lilly, Hospira, Merck-Serono, MSD, Novartis, Oktal, Orion Pharma, Pfizer, Roche, Sandoz, Sanofi, Mylan and UCB, Speakers bureau: AbbVie, Biogen, BMS, Boehringer Ingelheim, Celgene, Celltrion, Eli Lilly, Hospira, Merck-Serono, MSD, Novartis, Oktal, Orion Pharma, Pfizer, Roche, Sandoz, Sanofi and UCB, Espen Haavardshalen Grant/ research support from: Pfizer, UCB, Roche, MSD, and AbbVie, Consultant for: Pfizer, Paid instructor for: Pfizer, Speakers bureau: Pfizer, UCB, Roche, and AbbVie, Sin Lillegrenen: None declared

**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 score (0-30). 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 (U10) was the same of the modified U8 score plus scoring the 2 most clinically affected joint or tendon (one joint or one tendon) so the range of score (0-30).

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). 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) ultrasound and the highest score was used.

**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.

**Disclosure of Interests:** None declared