Diagnostics and imaging procedures

FRI0622

JOINT TENDERNESS AND ULTRASOUND INFLAMMATION IN EARLY RHEUMATOID ARTHRITIS PATIENTS INCLUDED IN THE ARCTIC TRIAL

nina.sundlisater¹, Anna-Birgitte Aga¹, Hilde Berner Hammer¹, Till Uhlig^{1,2}, Tore K. Kvien^{1,2}, Espen Haavardsholm^{1,2}, Siri Lillegraven¹. ¹Diakonhjemmet Hospital, Oslo, Norway; ²University of Oslo, Faculty of Medicine, Oslo, Norway

Background: A tender joint count is part of most disease activity scores and remission criteria in rheumatoid arthritis (RA). A recent study found that tender joint count might not reflect inflammatory activity, assessed by ultrasound, in established RA (1).

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

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-swollen 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 assessed both clinically and by ultrasound. We selected only joints that 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.

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], joint tenderness 7 [4, 13] and power Doppler score 7 [3, 14]. Of 444 wrists, 268 were not swollen. The frequency of power Doppler signal >0 in tender non-swollen wrists were 50% (18/36), compared to 23% (53/232) in non-tender non-swollen wrists (p-value for comparison = 0.001). This corresponds to an OR of 4.32 (95% CI 1.47 to 12.65, p=0.008) for power Doppler signal if the wrist is tender but not swollen, compared to a non-tender non-swollen wrist. Similar results were found for the non-swollen MCP-joints (Table).

Table: The frequency and odds ratio (OR) of ultrasound power Doppler (PD) activity in Ritchie positive versus Ritchie negative non-swollen wrists and MCP joints.

	PD-signal positive if Ritchie positive	PD-signal positive if Ritchie negative	OR (CI)	p-value
Non-swollen wrist, n=268	18/36 (50%)	53/232 (23%)	4.32 (1.47 to 12.65)	0.008
Non-swollen MCP joints, n=165	15/35 (43%)	28/130 (22%)	4.84 (1.31 to 17.89)	0.02

Conclusion: Ultrasound power Doppler activity was more frequent in non-swollen wrists and non-swollen MCP joints if the joints had been scored as tender or painful by Ritchie Articular Index. Our findings indicate that in early RA patients, tenderness might reflect inflammation which is not detectable clinically.

REFERENCES:

- [1] Hammer HB, et al. Arthritis care & research. 2018.
- [2] Haavardsholm EA, et al. BMJ. 2016;354.
- [3] Hammer HB, et al. ARD. 2011;70(11).

Disclosure of Interests: nina.sundlisater: None declared, Anna-Birgitte 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 Haavardsholm Grant/research support from: Pfizer, UCB, Roche, MSD, and AbbVie, Consultant for: Pfizer, Paid instructor for: Pfizer, Speakers bureau: Pfizer, UCB, Roche, and AbbVie, Siri Lillegraven: None declared
DOI: 10.1136/annrheumdis-2019-eular.4657

FRI0623

MRI-DETECTED DIGIT FLEXOR TENOSYNOVITIS IN BILATERAL PROXIMAL INTERPHALANGEAL JOINTS CONTRIBUTE TO JOINT TENDERNESS IN PATIENTS WITH EARLY RHEUMATOID ARTHRITIS

YingQian Mo¹, Ze-Hong Yang², Jun-Wei Wang¹, Li Qian-Hua¹, Xin-Yun Du¹, Yan-Hui Xu¹, Kui-Ming Yang¹, Guang-Zi Shi², Jun Shen², Lie Dai¹. ¹Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University, Department of Rheumatology, Guangzhou, China; ²Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University, Department of Radiology, Guangzhou, China

Background: Independent predictive value of ultrasonography-detected digit flexor tenosynovitis has been reported for rheumatoid arthritis (RA) development in patients with early arthritis, and it also was reported as an 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 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). Forty-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 were detected in 84%, 100% and 83% of the patients; and respectively in 21% 44%, 43% 56% and 5% 11% of various PIPJs. There were 12% 30%, 28% 40%, and 2% 8% of PIPJs 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 interphalangeal joint (IPJ) of thumb, PIPJ2 and PIPJ4 was 16% 18% higher than the non-dominant counterparts, indicating a potential impact of overuse on dominant tenosynovitis. 3) Tenosynovitis affects periarthral digit flexor tendon compartment and 65% 87% of tenosynovitis in PIPJs occurred together with synovitis in joint cavity and/or osteitis in subchondral bone. Among tender IPJ of thumb, 50% of them showed MRI synovitis 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).