OP0131 **COMPARISON OF CLINICAL PHENOTYPE, SEROLOGICAL CHARACTERISTICS AND HISTOLOGIC FEATURES OF MALES VS FEMALES PATIENTS WITH PRIMARY SJÖGREN'S SYNDROME (PSS)**

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Background: Primary Sjögren's syndrome (pSS) is a female predominant autoimmune disease and very few studies have been conducted to address the phenotypic and laboratory differences of the disease between the two genders.
Objectives: To investigate whether gender in pSS interferes with clinical manifestations, serology, disease course and lymphoma development, in the largest cohort of pSS males in Greece.
Methods: From a cohort of 588 consecutive pSS patients who fulfill the 2016 ACR/EULAR criteria for Sjögren's, 33 males were included in the study. Every male was matched with a female in a 1:2 ratio, according to age of disease onset and disease duration. A 3 year age deviation was permitted. Glandular (dry mouth, dry eyes, parotid gland enlargement) and extra-glandular manifestations (Raynaud's phenomenon, lymphadenopathy, arthralgias/arthritis, palpable purpura, liver involvement, kidney involvement, lymphoma) as well as serology (anti Ro/SSA, anti La/SSB, rheumatoid factor, cryoglobulinemia, low C4 complement levels) and histologic features (focus score, presence of germinal centers) were recorded and compared. Statistical analysis for categorical data was performed by Fisher exact test in SPSS software version 22.0.
Results: The median age of disease onset was 52 years (range: 15-71 years) for the male group and 50 years (range: 15-73 years) for the females. The median disease duration was 8 years (range: 0-26 years) and 7 years (range: 0-26 years) for males and females respectively. Anti-La/SSB antibodies were found in statistically significant higher frequency in males compared to female patients [21/33 (63.3%) vs 23/66 (34.8%), respectively, p=0.009]. A similar trend was observed regarding anti-Ro/SSA antibodies [26/32 (81%) for males vs 44/64 (68%) for females] and rheumatoid factor [18/26 (69%) for males vs 28/57 (49%) for females], however without reaching statistical significance. Furthermore, males with pSS had less frequently Raynaud's phenomenon [3/33 (9%) vs 17/64 (26.5%) respectively] and a tendency to develop lymphomas [6/33 (18%) for males vs 6/65 (9%) for females] compared to females.
Conclusion: This is the first study comparing males and females with pSS after applying the 2016 ACR/EULAR classification criteria. The difference in the prevalence of anti-La/SSB antibodies and to a lesser extend of anti-Ro/SSA and rheumatoid factors implies a potential role of gender and hormones in the production of autoantibodies. Furthermore, higher frequency of lymphoma among males without classical risk factors may suggest distinct lymphomagenesis mechanisms between the 2 genders.
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Diagnostics and imaging procedures

OP0132 **HOW ACCURATE IS PHYSICAL JOINT EXAMINATION OF THE MTP-JOINTS, AND WHAT CAN WE LEARN FROM ADDITIONAL MAGNETIC RESONANCE IMAGING ON FOREFOOT INVOLVEMENT IN EARLY ARTHRITIS?**

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Background: Magnetic resonance imaging (MRI) is known to be more sensitive than physical examination in detecting inflammation, and has predominantly been studied in metacarpophalangeal-(MCP) and wrist-joints. Data on the concordance and discordance of physical examination and MRI-detected inflammation of metatarsophalangeal-(MTP)joints is scarce, which is surprising as physical examination of these joints is generally considered more challenging than of MCP-joints.
Objectives: We aimed to study the concordance and discordance of arthritis upon physical examination with MRI-detected inflammation of MTP-joints. Analyses on MCP-joints were included for comparison.
Methods: 1764 MTP(2-5)-joints and 1764 MCP(2-5)-joints of 441 consecutive patients presenting with early inflammatory arthritis (36% RA, 64% other inflammatory arthritides) underwent physical examination (PE) of joint swelling and 1.5T contrast-enhanced MRI of unilateral MCP- and MTP-joints. MRI-detected synovitis and bone marrow oedema were scored according to the RA MRI score (RAMRIS), and tenosynovitis according to Haavardsholm by two experienced readers (scores ranged 0-3). Analyses were done on joint level and joints were grouped as PE+MRI+, PE–MRI–, PE+MRI– and PE–MRI+. MRI-positivity required the presence of the same MRI-inflammatory feature on joint level that was scored by both readers$\geq$1. In addition, to be classified as PE+MRI–, the joints required to have clinical swelling as objectified by two independent observers. After categorisation, the MRIs of the joints that were PE+MRI– were further studied by two other, independent observers among whom an experienced musculoskeletal radiologist, to investigate the presence of contrast-enhancement that was not scored according to RAMRIS guidelines.
Results: Physical examination of joints and MRI were concordant in 79% of MTP-joints (6% PE+MRI+, 74% PE–MRI–). For the MCP-joints this was 71% (15% and 56% respectively). Next discordance was studied. Subclinical joint inflammation (PE–MRI+) was present in 14% (n=248) of MTP-joints. This was less frequent than in MCP-joints, where subclinical inflammation was present in 27% joints (n=465, p<0.001). Discordance in the opposite direction (PE+MRI–) was present in 5% of MTP-joints (n=78). This was observed more frequent than in MCP-joints (3%, n=44 joints, p<0.001).
Subsequently, the MRIs of the joints that were clinically inflamed and scored negative according to RAMRIS were studied for other MRI-abnormalities. Out of the 78 MTP-joints that were PE+MRI–, 54% (n=42) showed no MRI abnormalities, whereas in 46% (n=36) extra-articular contrast-enhanced lesions were observed that were predominantly identified as peri-arthritis and intermetatarsal bursitis. Within this category, extra articular inflammation was more prevalent in RA than in other inflammatory arthritides (58% vs 26%, p=0.005). At the MCPs no extra-articular inflammation was found.
Conclusion: Joint examination and MRI were mostly concordant in MTP- and MCP-joints. In MTP-joints MRI-detected subclinical joint inflammation was infrequent (14%), especially when compared to MCP-joints (27%). Clinical joint swelling without MRI-detected joint inflammation according to RAMRIS was also infrequent (5% of MTP-joints) and in part caused by extra-articular inflammation such as intermetatarsal bursitis. Further detailed imaging studies are needed to determine if extra-articular inflammation at the level of MTP-joints, with or without concomitant intra-articular inflammation, is a novel finding that is characteristic for early RA.
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OP0133 **ONE-YEAR PROGRESSION OF EROSIVE DISEASE EVALUATED WITH HIGH-RESOLUTION PERIPHERAL QUANTITATIVE COMPUTED TOMOGRAPHY IN PATIENTS WITH ANTI-CITRULLINATED PEPTIDE ANTIBODIES AND ARTHRALGIA**

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Background: Bone erosions are common at diagnosis of rheumatoid arthritis (RA). However, bone erosions in preclinical RA (pre-RA) are not well described, and have not been studied prospectively.
High resolution peripheral quantitative computed tomography (HR-pQCT) has a spatial resolution of 82 µm and may therefore be ideal to detect bone erosions.
Objectives: To evaluate erosive progression with HR-pQCT in anti-citrullinated peptide antibody (ACPA) positive patients with arthralgia compared with healthy subjects.

Methods: Patients were recruited by specialists in rheumatology at hospital clinics and in private practice, and healthy controls were recruited from a website for research subjects. Patients with arthralgia, ACPA and no rheumatic disease, and controls without arthralgia, ACPA, or rheumatic disease were included. Medical history, ACPA, clinical examination and ultrasound of symptomatic joints were performed in all patients and controls. A 2.7-cm-long volume of interest in the 2nd and 3rd MCP joint of the right hand was HR-pQCT scanned at a spatial resolution of 82 μm at baseline and after one year. Cortical and trabecular bone structure were evaluated in a 12.3-mm-long volume of interest proximal to the MCP head using the provided scanner software. Erosions were defined as cortical breaks in two consecutive slices, in two planes, non-linear in shape, and with loss of underlying trabecular structure. Number, depth, width, and volume of erosions were measured using the Osirix DICOM viewer. Intra observer agreement for erosions was evaluated with Cohens *Kappa* and coefficient of variance (CV). Values are median(interquartile range).

Results: Twenty-two patients (aged 53(36-63) years) and 23 controls (aged 48 (42-57) years) were evaluated. Ten patients were diagnosed with RA after 86(24-200) days. There was a significant increase in the number of patients with erosions during follow-up in the patient group (4 vs. 10, p=0.031), but not in the control group (1 vs. 4, p=0.083). In addition, at follow-up more erosions per individual were demonstrated in patients compared to controls (p=0.031).

The increase in average and total volume of erosions from baseline to follow-up were larger in patients compared with controls (Fig. 1) (p=0.031 and p=0.027). At follow-up average and total width, depth and volume of erosions were larger in patients compared with controls (p between 0.031 and 0.045).

Percent change in bone density, cortical, as well as trabecular parameters did not differ between patients and controls. Agreement was 95% equivalent to a *kappa* of 0.89 for erosions. CV for width, depth, and volume of erosions were 8%, 23%, and 39%.

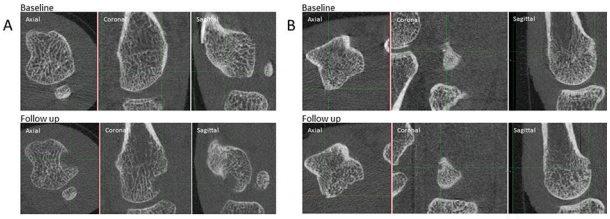

Fig. 1 High resolution peripheral quantitative computed tomography images of bone changes. **(A)** New active erosion at follow up in a patient characterized by diffuse/wolly lining. **(B)** New active erosion at follow up in a control.

Conclusion: Progression of erosive disease in ACPA positive patients with arthralgia using HR-pQCT is reported for the first time. The results highlight that an even earlier diagnosis of RA is crucial to prevent erosive disease.

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OP0134 ULTRASOUND IN THE MANAGEMENT OF EARLY RHEUMATOID ARTHRITIS: MRI OUTCOME DATA FROM THE ARCTIC RANDOMIZED CONTROLLED STRATEGY TRIAL

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Background: It has been debated whether treatment outcomes in early RA would be improved by targeting imaging remission, assessed by ultrasound or MRI, in addition to clinical remission. The primary analyses of the ARCTIC and TaSER trials (1, 2) did not show a beneficial effect of adding structured ultrasound assessment to a treat-to-target tight control strategy. However, both studies reported a trend toward less radiographic progression in the ultrasound arm.

Objectives: We aimed to investigate whether management of early RA by a tight control strategy incorporating ultrasound information in treatment decision-making would lead to improvement in MRI inflammation or less structural damage, compared to a conventional tight control strategy.

Methods: The ARCTIC trial was a 24-month RCT with inclusion criteria age 18-75 years, fulfillment of ACR/EULAR criteria for RA, DMARD-naivety, < 2 years from first patient reported swollen joint, and indication for DMARD treatment. Patients were randomized to an ultrasound tight control strategy targeting DAS < 1.6, no swollen joints and no power-Doppler signal in any joint, or a conventional strategy targeting DAS < 1.6 and no swollen joints. Patients in both arms were treated by the same treat-to-target drug escalation algorithm starting with MTX, then triple combination therapy MTX/SSZ/HCQ, then biologic DMARD. In the ultrasound arm, treatment was stepped up if indicated by the ultrasound score, overruling the DAS and swollen joint count. MRI of dominant wrist and hand was performed at 6 times and scored in chronological order by a reader blinded to study arm and clinical data. MRI acquisitions and scoring were done according to the RAMRIS (3) recommendations. Of the 230 patients in ARCTIC, 218 (ultrasound n=116, conventional n=102) had MRI at baseline and ≥ 1 follow-up visit, and were included in the analyses. RAMRIS synovitis, tenosynovitis and bone marrow edema scores were summarized to a combined inflammation score; scores for erosions and joint space narrowing to a combined damage score. Mean change from baseline to each follow-up was estimated by a linear mixed model adjusted for baseline score, age, gender, center and anti-CCP status. The proportion of patients in each treatment arm with MRI erosive progression after 2 years was calculated, using the smallest detectable change (0.61) as cut-off.

Results: Demographic composition was comparable to the ARCTIC primary sample. There were no statistically significant baseline differences between the arms in either of the combined MRI scores. The mean combined MRI inflammation score decreased during the first year (1-year change in ultrasound arm −10.8 (95% CI: −12.0 to −9.6), conventional arm −10.3 (95% CI: −11.5 to −9.0), p=0.56), and maintained at the same level throughout the 2nd year. There were no significant differences in changes from baseline between the study arms at any time (figure 1a). The mean combined MRI damage score showed a small increase over time, without any significant differences between study arms (figure 1b). In the ultrasound arm 45% of patients had MRI erosive progression vs. 39% in the conventional arm (OR: 1.26 (95% CI: 0.73 to 2.16), p=0.40).

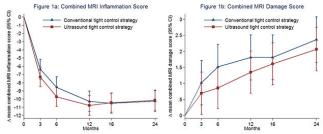

Figure 1a-b: Change from baseline level to 3, 6, 12, 16 and 24 months of the mean combined MRI inflammation score (range 0-180) and the mean combined MRI damage score (range 0-450). Estimates based on a linear mixed model adjusted for baseline score, age, gender, center and anti-CCP status.

Conclusion: A tight control strategy incorporating ultrasound information in treatment decisions did not lead to improved MRI inflammation or less structural damage, compared to a conventional tight control strategy. The findings support the conclusion of the ARCTIC trial that systematic use of ultrasound does not provide added value in the follow-up of patients with early RA treated according to current recommendations.

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