SAT0638 CLINICAL ACTIVITY, ULTRASOUND ASSESSMENT AND DRUG MONITORING IN RHEUMATOID ARTHRITIS PATIENTS RECEIVING ANTI-TNF-α THERAPY WITH EXTENDED INTERVAL OF ADMINISTRATION

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Objectives: To assess clinical activity, ultrasound synovitis and drug levels in rheumatoid arthritis (RA) patients receiving anti-TNFα therapy with extended interval of administration (EIA).
Methods: Prospective observational study. Population: RA patients, in clinical remission, receiving adalimumab (ADL) or etanercept (ETN) with EIA. Clinical activity was assessed by DAS28-ESR, DAS28-CRP, CDAI and SDAI scores at each visit. Twelve-joint ultrasound assessment (elbows, wrists, 2nd and 3rd metacarpophalangeal joints, knees and ankles) was performed evaluating synovitis through B-mode (BM) and Color Doppler signal (CD). A BM and CD score was calculated summing the highest score from each joint to a maximum of 36 points. We consider positive score >1 point. Serum drug levels were measured using Promonitor® ELISA kits (Progenika Biopharma-Grifols, Spain).
Results: A total of 39 patients were included since February 2011 to December 2016. One patient was excluded due to blindness violation and 2 patients never reduced anti-TNFα due to low drug levels. 31 patients were women (82%) and the mean age was 61 (39–81) years. Most patients were RF positive (87%) and ACPA positive (74%). 22 patients were with ADL treatment and 16 with ETN. 32 patients (82%) were with DMARD concomitant treatment (18 MTX (46%), 11 LEF (18%), 2 HCQ (5%), 1 SSZ (2%)) and 7 patients were with low-dose CS (18%). Mean time from diagnosis was 14,95 years (range 2,15 – 52,31) and Mean time with current biologic drug was 4,21 years (range 1,39 – 11,07). Nine patients (24%) returned to standard interval due to worsening of clinical activity and one discontinued treatment due to septic arthritis. All of them returned to clinical remission and no anti-drug antibodies were detected. Clinical activity scores, ultrasound scores and drug levels are summarized in table 1.

Table 1. Clinical activity scores, ultrasound scores and drug levels

	Basal visit	6 months	12 months
N	32	31	20
DAS28-ESR	2,0 (0,91)	1,83 (0,83)	1,61 (0,70)
DAS28-CRP	1,71 (0,51)	1,78 (0,52)	1,62 (0,48)
SDAI	4,25 (2,55)	4,27 (3,04)	3,64 (3,13)
CDAI	3,82 (2,48)	3,61 (2,33)	2,76 (1,3)
BM score	3,57 (4,57)	3,29 (3,81)	4,7 (4,32)
CD score	0,78 (0,80)	1,19 (1,7)	1,15 (1,42)
BM score (%)	73,91	77,42	90,00
CD score (%)	56,52	45,16	50,00
ETN	4,61 (2,74	3,59 (2,9)	3,03 (0,84)
ADL	12,05 (6,88)	8,49 (5,01)	6,49 (2,78)*

*p<0,05. All results mean (SD) otherwise specified.

Conclusions: 1. Clinical remission was sustained in most patients receiving ADL or ETN in extended interval of administration (EIA). 2. Drug levels decrease over time. 3. Some patients (24%) returned to standard interval of administration due to clinical worsening. 4. Some patients show subclinical ultrasound synovitis in B-mode (90%) or Color Doppler (50%) 5. It would be advisable to perform periodic ultrasound and monitoring of anti-TNFα levels to maintain clinical remission in patients with EIA.
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SAT0639 BIOLOGIC-ELIGIBLE RHEUMATOID ARTHRITIS PATIENTS DEMONSTRATE ABSENCE OF SYNOVITIS – UTILITY OF ULTRASOUND IN THE MANAGEMENT OF RA-BIOLOGIC POPULATION

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Background: Biologic drugs act by suppressing synovitis in patients with rheumatoid arthritis (RA). Clinical disease activity scores (DAS) are used to determine eligibility and assess biologic drug response. However, several drivers aside from synovitis may drive the DAS. Joint ultrasound (US) scan is more accurate than clinical examination in detecting inflammatory synovitis [1, 2], and is frequently used in clinical practice to assess need for biologic drug change [3].
Objectives: To phenotype DAS using US in patients eligible for a first/switch in biologic therapy and to evaluate whether and how this changed decision making.
Methods: A retrospective evaluation of RA patients who attended our tertiary centre biologic clinic between 2014 and 2016 and had an US to clarify basis for raised disease activity. Three-variable DAS28-CRP 28 joints (DAS28-CRP) was recorded and US reports were evaluated to determine which of the following characteristics were observed: presence of synovitis, tenosynovitis, osteoarthritis, tendinopathy and no abnormality. Clinic notes were reviewed to record change in the management of patients as a result of combined clinical and US scan findings.
Results: We identified 70 patients who had not received steroids within 4 weeks of the US, 84.3% female, median (range) age 58 (20–88) years. 66 (94.3%) patients were biologic experienced with 59 on ongoing treatment [3 (5.1%) abatacept, 22 (37.3%) anti-TNFα, 22 (37.3%) rituximab and 12 (20.3%) tocilizumab] of whom 47 (79.7%) were on combination with csDMARD therapy. 4 (5.7%) patients were biologic naive. 42 (63.6%) of bio-experienced patients, had a DAS28 ≥3.2 and were eligible for a change in their biologic however, only 17 of these patients had US-confirmed synovitis, 21 had evidence of osteoarthritis (OA), 1 tenosynovitis and 3 had no abnormalities. All biologic naïve patients had DAS28-CRP ≤5.1 before US however, 3 had US-confirmed synovitis and 1 had OA. Of bio-experienced, 13/66 (19.4%) patients, including 4 with DAS-28 <3.2 but US-confirmed synovitis, had a new biologic started. 3 rituximab patients (including one with subclinical synovitis) had re-treatment. Concomitant treatment was escalated in 13 (24.2%) patients. 35 (53.0%) patients, including 4 with US synovitis/tenosynovitis, had no change in their treatment. 2 (3.0%) patients self-discontinued treatment.
Conclusions: By identifying lack of inflammatory synovitis in biologic eligible patients US reduced the need for unnecessary and costly change of biologics. US also detected subclinical synovitis warranting modification of their treatment.
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SAT0640 DIAGNOSTIC UTILITY OF DETECTING ENTHESITIS BY ULTRASOUND IN PERIPHERAL SPONDYLOARTHRITIS

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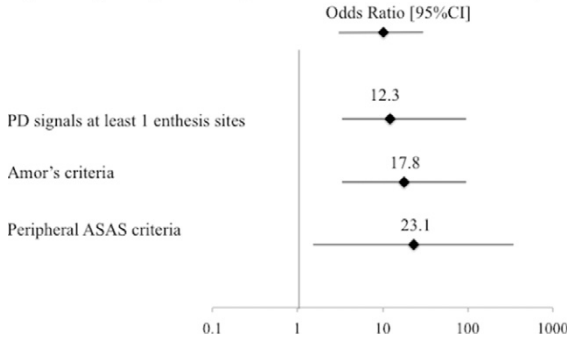
Objectives: To evaluate the diagnostic utility of detecting enthesitis by ultrasound in patients with peripheral spondyloarthritis (SpA).
Methods: A single-center cohort study was performed in patients with symptoms suggestive of peripheral SpA (inflammatory back pain, arthritis of the lower limbs, tenderness of the entheses and dactylitis). Patients with only axial symptoms in the absence of peripheral symptoms were excluded. Fourteen sites of enthesis (both sides of lateral epicondyle, quadriceps tendon insertion into the patella, patellar ligament insertion into the patella and tibial tuberosity, medial and lateral femoral condyles, and Achilles tendon) were assessed at baseline by ultrasound. Ultrasound assessment was made by Japan College of Rheumatology (JCR)-registered sonographers. Furthermore, articular synovitis and tenosynovitis of both wrist and finger joints as well as symptomatic sites were examined. Clinical, laboratory (CRP, HLA typing), radiological (X-ray and MRI of sacroiliac joint) findings and SpA classification criteria (Amor's, ESSG and ASAS) were also evaluated. The gold standard was the diagnosis made by the JCR-certified rheumatologists during a six-month follow-up period.
Results: Between April 2014 and November 2016, one hundred-thirty six patients were consecutively enrolled. A definite diagnosis was obtained in 112 patients (72 SpA and 40 non-SpA). Diagnosis was not made in the remaining 24 patients. Seventy-two SpA patients (62 with undifferentiated SpA, 6 with psoriatic arthritis, 2 with AS, 1 with inflammatory bowel disease-associated arthritis and 1 with reactive arthritis) and 40 non-SpA patients were investigated in this study. In ultrasound findings, SpA patients showed power Doppler (PD) signals of the articular synovium (57%), tendon sheath synovium (71%) and enthesis (94%). A PD signal for at least one enthesis sites was the most useful finding for differentiation of SpA from non-SpA (sensitivity 94%; specificity 85%; accuracy 91%; positive likelihood ratio 6.3) regarding ultrasound findings. In logistic regression analysis, fulfillment of peripheral ASAS criteria, that of Amor's criteria, and presence of PD signals at least one enthesis sites were independent variables to the contribution of diagnosis of SpA (Figure 1).

Figure 1. Logistic regression analysis for the contribution of diagnosis of SpA



Conclusions: PD signals of entheses by ultrasound are useful for the diagnosis of SpA with peripheral joint symptoms. In addition to the consideration of axial SpA, the combination use of ultrasound with clinical classification criteria including ASAS and Amor's criteria is beneficial to diagnose peripheral SpA.
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SAT0641 THE DIAGNOSTICS OF OSTEOPOROSIS IN MALE REUMATOID PATIENTS

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Background: Rheumatoid arthritis (RA) - chronic immune inflammatory joint disease leading to early disability of patients at high risk for cardiovascular events and osteoporotic fractures. Of particular relevance, this problem becomes in men with RA, due to more frequent severe disease and increased mortality in the year after the fracture. Reduced bone mineral density (BMD) and muscle mass are significant predictors of fracture, which leads to the high importance of studying the state of the IPC and body composition.
Objectives: To improve the diagnosis of osteoporosis in patients with RA male subjects.
Methods: A total of 146 male patients with definite diagnosis of RA at the age of 59 years. Depending on the reception of glucocorticosteroids (GCS) is allocated two subgroups: I subgroup - 40 patients not receiving corticosteroids and II subgroup - 66 patients receiving corticosteroids. The control group consisted of 24 healthy men, matched by age and body mass index. IPC Study in the lumbar spine (L1-L4) and femoral carried out by dual-energy X-ray absorptiometry using osteodensitometry. Evaluation of body composition was carried out with the help of "Pod" program.
Results: In 63% of patients with RA revealed male BMD reduction corresponding to osteopenia/OP (OP was diagnosed in 36 (24.7%) patients with RA, and osteopenia - in 56 (38.4%)). The incidence of OP in the II subgroup was significantly higher ($p<0,05$), than in the I subgroup (48.5% and 5% respectively). The most significant decrease in BMD observed in femoral neck in the study group as a whole, and in individual subgroups. There was a negative correlation between the degree of RA activity and performance of the IPC as a lumbar spine ($r = -0,4$, $p<0.05$), and the proximal femur ($r = -0,38$, $p<0.05$). Evaluation of body composition showed that the treatment group had a significant decrease in total lean mass (TM) body, as well as the trunk and extremities TM compared with those of control group ($p<0,05$). Sarcopenia detected in 80 (55.8%) of RA patients, whereas in the control group it was absent. In 50 (67.6%) of patients with RA male sarcopenia observed to decrease the level of the IPC osteopenia (35.2%) and OD (32.4%). After receiving a negative correlation parameters TM and the absolute 10-year risk of osteoporotic fractures ($r = -0,302$, $p<0,05$) on the FRAX.
Conclusions: 63% of men suffering from RA, observed BMD decrease corresponding OP/osteopenia with a primary decrease in BMD at the femoral neck. Reduced BMD in patients with RA was significantly associated with a high degree of disease activity ($r = -0,4$, $p<0.05$). Receiving corticosteroids had no significant effect on BMD at the femoral neck. Analysis of body composition in 55% of RA patients revealed a decrease in TM limbs to the level of sarcopenia. Received correlation decrease BMD and TM limbs ($p<0,05$; $r =0,28$). Thus, in patients with RA males along with OP/osteopenia revealed a significant decrease in TM, that in view of the biomechanics of the movements may be an additional risk factor for falls and fractures.
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SAT0642 ULTRASONOGRAPHY AND INTRA-ARTICULAR INJECTION THERAPY IN EARLY RHEUMATOID ARTHRITIS: RESULTS FROM THE RANDOMISED ARCTIC TRIAL

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Background: Intra-articular (i.a.) corticosteroid injections are in many countries an integral part of rheumatoid arthritis (RA) treatment. Ultrasonography (US) is increasingly used in the management of RA as a tool to select joints for i.a. injections. How selection of joints based on US information affects distribution of injections has not been previously studied. US can detect joints with subclinical inflammation, however, it is unknown whether there is any added value of injecting these joints.
Objectives: We aimed to explore how US information influences the selection of joints for corticosteroid injection therapy. Additionally, we wanted to examine the efficacy of injecting joints with subclinical inflammation detected by US in terms of reduction of subclinical inflammation and prevention of clinical synovitis.
Methods: In the ARCTIC trial, DMARD-naive RA patients fulfilling the 2010 ACR/EULAR criteria were randomised 1:1 to follow-up with or without US.[1] In both arms the same DMARD treatment strategy was applied, and clinically swollen joints were treated with i.a. steroids when indicated. In the US arm, clinicians could also inject non-swollen joints with PD activity. Patients were assessed at 13 visits during 2 years of follow-up and injections could be performed at all visits. Distribution of injections in patients followed with and without US was assessed. The proportion of patients with any injection was compared between arms using logistic regression, adjusted for gender. In addition, we examined the effect of injections in clinically non-swollen joints with PD $\geq$2 (range 0–3) by comparing clinical joint swelling and estimated mean change in PD activity at the next visit in injected versus non-injected joints. We used logistic and linear mixed model with random intercept by patient in order to adjust for within-patient dependencies.
Results: 230 patients were included (US arm 118, conventional arm 112). Mean (SD) age was 50.6 (13.3)/ 52.3 (14.1) years, 71/51% were females and mean (SD) baseline DAS was 3.5 (1.2)/3.4 (1.2) in the US/conventional arms. [1] More injections occurred in the US arm than in the conventional arm (770 vs 548), especially in intercarpal (58 vs 5) and MTP joints (200 vs 104) (Table 1). In the US arm, 193 joints were clinically non-swollen, but had PD score $\geq$2. Of these, 77 joints were injected. 72/77 injected joints (93.5%) remained non-swollen at next visit compared to 88/116 non-injected joints (75.9%), with an odds ratio of 3.97 (CI: 1.25–12.57, p=0.019, NNT:6). Estimated mean (SE) reduction of PD activity was 2.3 (0.1) compared to 2.0 (0.1) in injected versus non-injected joints ($p<0.001$).

Joint	Number of injections, 0-24 months		Patients with any injection n (%)			
	Ultrasonography N=118	Conventional N=118	Ultrasonography N=118	Conventional N=112	OR (95% CI)	p-value*
DIP 2-5	2	5	2 (1.7)	3 (2.7)	0.62 (0.10-3.93)	0.61
PIP 1-5	74	122	37 (31.4)	36 (32.1)	1.15 (0.65-2.06)	0.63
MCP 1-5	163	113	55 (46.6)	44 (39.3)	1.45 (0.83-2.45)	0.19
Radioulnar	33	9	18 (15.3)	8 (7.1)	2.33 (0.95-5.69)	0.06
Radiocarpal	65	43	39 (33.1)	27 (24.1)	1.66 (0.92-3.03)	0.09
Intercarpal	58	5	33 (28.0)	4 (3.6)	13.38 (4.40-40.75)	**<0.001**
Elbow	15	13	10 (8.5)	9 (8.0)	1.22 (0.46-3.21)	0.90
Shoulder	26	26	14 (11.9)	16 (14.3)	0.78 (0.36-1.72)	0.54
Toes (IP)	7	22	6 (5.1)	13 (11.6)	0.43 (0.15-1.19)	0.10
MTP 1-5	200	104	63 (53.4)	36 (32.1)	2.61 (1.50-4.55)	**0.001**
Ankle	35	35	18 (15.3)	17 (15.2)	1.02 (0.49-2.13)	0.96
Knee	58	31	27 (22.9)	17 (15.2)	1.65 (0.83-3.28)	0.15
Other joints	34	20	14 (12.5)	22 (18.6)	1.59 (0.76-3.35)	0.20
Total	770	548	103 (87.3)	86 (76.8)	2.40 (1.17-4.93)	**0.017**

*Adjusted for gender

Conclusions: Our study shows that follow-up with US may lead to an increased number of joint injections with a different distribution of injected joints compared to follow-up without US. Joints with subclinical inflammation were more likely to remain non-swollen at next visit if injected. However, as the number of joints needed to treat to prevent one swollen joint was six, the clinical relevance of injecting joints with subclinical inflammation may be questionable.
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