4). In TCZ group, CRP and ESR were significantly lower than the other groups, although other clinical indicators were comparable (Table).

Fig 1: Boolean-based analysis

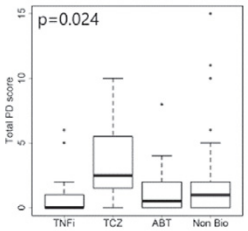


Fig 2: SDAI-based analysis

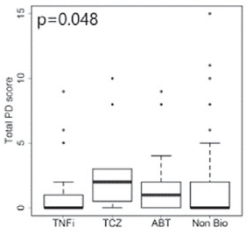


Fig 3: DAS28-ESR-based analysis

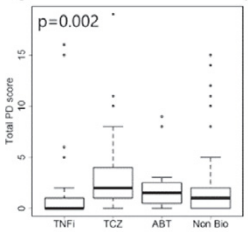
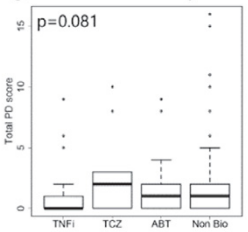


Fig 4: CDAI-based analysis



Kruskal-Wallis rank sum test

Conclusions: US revealed that CR in TCZ-using can be overestimated by BL-based, SDAI-based, and DAS28-ESR-based CR criteria. For TCZ users, CDAI-based CR criteria is more reliable than the other criteria.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.1705

FRI0674 USING HIGHER IMAGE RESOLUTION OF MAGNETIC RESONANCE IMAGING OF THE CERVICAL SPINE IDENTIFIES MORE INFLAMMATORY AND STRUCTURAL LESIONS IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS

S. Krabbe[1], M. Østergaard[1], J. Møller[2], I.J. Sørensen[1], B. Jensen[1], O.R. Madsen[1], S.J. Pedersen[1]. *[1]Center for Rheumatology and Spine Diseases, Rigshospitalet, Copenhagen; [2]Department of Radiology, Herlev Hospital, Herlev, Denmark*

Background: The vertebrae of the cervical spine are rather small and it may be difficult to assess if small areas with signal intensity changes represent the bones, joints or entheses, or derive from the surrounding blood vessels.
Objectives: To investigate if image resolution affects the assessment of inflammatory and structural lesions of the cervical spine.
Methods: Forty-nine patients with axial spondyloarthritis according to the ASAS criteria started anti-TNF treatment and had "standard" resolution (std-res) and "high" resolution (high-res) MRI sequences of the cervical spine performed at baseline and after 48 weeks. 3 patients had follow-up scan already after 6–24 weeks due to study exclusion.
Std-res: STIR sequence: Voxel size 5.0 mm^3 (slice thickness 4.0, spatial resolution 1x1.25); T1W sequence: voxel size 4.5 mm^3 (slice thickness 4.0, spatial resolution 0.9x1.25).
High-res: STIR sequence: Voxel size 3.1 mm^3 (slice thickness 3.5, spatial resolution 0.8x1.11); T1W sequence: voxel size 1.4 mm^3 (slice thickness 3.0, spatial resolution 0.6x0.76).
Images were assessed in known chronology by an experienced axSpA MRI reader (SJP) blinded to clinical data. High-res and std-res were read in random order. MRI lesions of inflammation, fat and new bone formation were defined according to the Canada-Denmark working group [1,2]. Erosions were not assessed.
Results: Inflammatory lesions: In 9 of 43 patients (21%), inflammatory lesions were detected in the cervical spine at baseline at std-res, while this was detected in 14 of 43 patients (33%) at high-res. Using high-res, as compared to std-res, 6 patients were reclassified from negative to positive for inflammation, 1 patient was reclassified from positive to negative, and 8/28 patients remained classified as positive/negative, p=0.13 by Exact McNemar test. The mean inflammation score was significantly higher at high-res compared to std-res (1.7 (SD 4.5) vs. 0.8 (SD 2.7), p=0.04 by paired t-test).
Fat lesions: 11 of 43 patients (26%) had fat lesions in the cervical spine at baseline using std-res, while 10 of 43 patients (23%) had this using high-res. The mean fat score was significantly higher at high-res compared with std-res (1.6 (SD 3.5) vs. 0.8 (SD 1.8), p=0.02 by paired t-test).
Bone spurs/ankylosis: 11 of 43 patients (26%) had bone spurs/ankylosis of the cervical spine at baseline at std-res, while 10 of 43 patients (23%) using high-res. The mean new bone formation score was significantly higher at high-res compared with std-res (2.7 (SD 6.1) vs. 1.4 (SD 3.5), p=0.01 by paired t-test).
Responsiveness: Standardized response mean for inflammation score at std-res was 0.15, and at high-res 0.14. Structural lesions remained largely unchanged in all patients.
Conclusions: More patients were classified as having inflammatory lesions in the cervical spine when using high-res MRI, compared to std-res. Likewise, mean scores of inflammatory lesions, fatty lesions and new bone formation were significantly higher compared with std-res. Further studies are needed to investigate the clinical significance of these findings as well as the frequency of these minor lesions in healthy controls.
ClinicalTrials.gov: NCT01029847.
References:
[1] Lambert RGW, et al. J Rheumatol 2009;S84:3–17.
[2] Østergaard M, et al. J Rheumatol 2009;S84:18–34.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.3200

FRI0675 OBTAINING SYNOVIAL BIOPSIES FROM THE WRIST IN PATIENTS WITH NEWLY DIAGNOSED UNTREATED AND LONGSTANDING RHEUMATOID ARTHRITIS FOLLOWED BY INTRAMUSCULAR GLUCOCORTICOID AND METHOTREXATE INITIATION IS SAFE AND THE GLUCOCORTICOID TREATMENT SIGNIFICANTLY REDUCES DISEASE ACTIVITY

S.A. Just[1], C. Nielsen[2], E.K. Hejbøl[3], H.D. Schrøder[3], I.M.J. Hansen[4], T. Barington[2], H.M. Lindegaard[1]. *[1]Rheumatology; [2]Clinical Immunology; [3]Clinical Pathology, Odense University Hospital, Odense; [4]Medicine, Svendborg Hospital, Odense University Hospital, Svendborg, Denmark*

Background: The minimal invasive ultrasound-guided synovial biopsy (USG-SB) method has been shown to be safe and tolerable. The method has accelerated the research field of using synovial biopsies focusing on early diagnosis, disease stratification, biomarker studies and in the future optimal treatment selection for the individual patient. Here synovial biopsies obtained from patients with early arthritis before therapy initiation are essential. A major issue in newly diagnosed RA patients but also in RA patients with longstanding active RA, is to combine an effective fast working treatment with safely obtaining synovial tissue without delaying treatment initiation. In the EULAR early arthritis recommendations, prompt treatment initiation is recommended by combining glucocorticoid bridge therapy with disease-modifying antirheumatic drugs (DMARD). It is therefore essential that accepting synovial biopsy, does not delay start of fast remission-inducing treatment. Especially if synovial biopsies by the USG-SB method in the future shall be used systematically for detailed disease stratification and personalized treatment decisions.
Objectives: Safety of using intramuscular glucocorticoid injection (IGI) immediately after the USG-SB procedure in patients with newly diagnosed untreated RA or longstanding active RA, and the effect of IGI on disease activity after 4 weeks.
Methods: Wrist synovial biopsies were taken) at inclusion and after 6 months from 22 patients with newly diagnosed, untreated RA and 15 with longstanding RA (>5 years). After biopsies patients were offered an IGI of 2 ml of methylprednisolone acetate (Depo Medrol) 40mg/ml. Early RA patients were also started on methotrexate. Disease activity scores in 28 joints (DAS28) were recorded at day of biopsy and again after 4 weeks. Safety data were obtained after 5 days (telephone), 2 weeks (questionnaire) and at first clinical evaluation (4 weeks) after biopsy. Patient-reported outcomes (PRO) with pain, swelling and stiffness of biopsied joint were obtained at day of biopsy and after two weeks.
Results: At present time, all patients have undergone first biopsy and 18/37 second biopsy. At the EULAR congress complete data will be presented. 68% of all patients accepted IGI after first biopsy currently 39% after second procedure. Patients accepting IGI after first biopsy did not have higher DAS-28 (early RA group (p=0.15), longstanding RA (p=0.06)). Time to first follow-up was not significantly different for patients accepting IGI (early RA group (p=0.17), longstanding RA (p=0.05)). Two weeks after biopsy, PRO was not significantly different when comparing IGI vs non-IGI treated. For all patients, DAS-28 was significantly reduced in the group receiving IGI at first clinical evaluation after synovial biopsy (p=0.004, without IGI ΔDAS28: -0.5, with IGI ΔDAS28: -1.7).
Conclusions: Start of treatment with IGI combined with DMARD after obtaining synovial biopsies by the USG-SB procedure from patients with early untreated RA and longstanding RA is safe, and reduces disease activity more than without IGI.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.2491

FRI0676 A PROPOSAL FOR A SIMPLE ULTRASOUND METHOD FOR THE DIAGNOSIS OF EARLY RHEUMATOID ARTHRITIS

T. Serban[1,2], I. Satulu[3], O. Vutcanu[1], M. Milicescu[1,2], C.M. Mihai[1,2], M. Bojinca[1,2]. *[1]Internal Medicine and Rheumatology, "Dr. I. Cantacuzino" Clinical Hospital; [2]Internal Medicine and Rheumatology, "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania; [3]Rheumatology, Kalmar County Hospital, Kalmar, Sweden*

Background: At this point, the classification criteria for rheumatoid arthritis (RA) are well known and generally applied in clinical practice. (1) Ultrasound (US) assessment can help in distinguishing the patients with early RA (ERA) within the patients with early inflammatory arthritis (EIA).
Objectives: The aim of this study was to develop an US method for the diagnosis

of ERA in a population of EIA patients from an Early Arthritis Research Center (EARC).
Methods: We have assessed all patients with EIA referred to our EARC between 2012–2016. Patients who were diagnosed with other diseases except EIA or ERA, or in whom symptom duration exceeded 12 months, were excluded from the analysis. Every patient underwent clinical, laboratory and ultrasound evaluation. For the proposed US diagnostic method we have evaluated bilaterally 3 joints: wrists, MCP II and III and 2 tendon regions: the extensor ulnaris carpis tendon and the flexor tendons of the fingers. The presence/absence of synovitis/tenosynovitis either in gray-scale or power-Doppler scale was scored in a binary mode as 1/0. In order to simplify the scanning protocol, we considered the flexor tendons of the fingers as a singular structure for each hand which meant that that the presence of US abnormalities in at least one flexor tendon was scored as 1. Thus, the maximum score obtainable in both hands was 10. We analyzed the performance of the proposed US method for the diagnosis of ERA using ROC curve analysis.
Results: Of 253 patients referred to our EARC, 73 satisfied the inclusion criteria; among them, 43 fulfilled the EULAR/ACR criteria for RA (ERA patients), while the other 30 were considered to have undifferentiated EIA. The demographic, clinical and US data of the 73 patients are displayed in the table below. 34/43 ERA patients (76.7%) had a duration of symptoms less or equal to 3 months which classifies them as very ERA (VERA).

Table 1. Demographic, clinical, laboratory and US data of the study patients – data are either n (%), mean ± SD or median (IQR)

Parameters	EIA (n=30)	ERA (n=43)	p
Gender (Female)	17 (56.7%)	27 (62.8%)	0.816
Age	41.70±15.58	55.47±13.71	<0.001
Mean duration of symptoms	3.16±3.22	3.54±3.58	0.556
CRP (mg/l)	7.85 (1.99–26.20)	18.62 (3.57–14.68)	0.848
ESR (mm/h)	26.00 (10.00–44.75)	34.53 (14–51)	0.238
RF (IU/ml)	10.00 (7.85–14.56)	142.75 (35.14–201.74)	<0.001
ACPA (IU/ml)	5.00 (0.5–5.00)	153.96 (46.20–212.00)	<0.001
DAS28	4.00 (3.35–5.05)	4.89 (4.31–5.60)	<0.001
SDAI	17.82 (12.28–26.37)	27.96 (20.92–34.61)	<0.001
US evaluation	0 (0–3)	5 (3–7)	<0.001

In ROC analysis, a cut-off of the US score of 4 had best results for sensitivity and specificity (73.3% and 82.1%, respectively), with an area under the curve of 0.812. The US score correlated with the levels of RF, ACPA, DAS28 and SDAI ($p<0.001$), but not with those of acute phase reactants ($p>0.05$). The time needed for performing the ultrasound examination was less than 10 minutes.
Conclusions: The proposed US method proves to be reliable in identifying patients with ERA. The binary mode of US evaluation allows even persons with little training in US examination to diagnose patients. As the costs and time needed for US evaluation are low, the method is valuable in clinical practice for a rapid assessment of patients with EIA.
References:
[1] Aletaha D et al. Arhritis Rheum. 2010;62:2569–258.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.4604

FRI0677 ROLE OF NAILFOLD VIDEOCAPILLAROSCOPY AND 22-MHZ DOPPLER ULTRASOUND IN THE ASSESSMENT OF SYSTEMIC SCLEROSIS-RELATED DIGITAL VASCULOPATHY

T. Schioppo[1,2], A. Orenti[1,3], P. Boracchi[1,3], O. De Lucia[2], A. Murgo[2], P.L. Meroni[1,2], F. Ingegnoli[1,2] on behalf of OPERA study group. *[1]Università degli Studi di Milano; [2]ASST Pini-CTO; [3]Lab of Medical Statistics, Epidemiology and Biometry GA Maccacaro, Milan, Italy*

Background: Microvascular damage plays a critical role in the initiation and perpetuation of systemic sclerosis (SSc). A comprehensive approach should investigate both superficial and deep layers of peripheral microcirculation. In addition to nailfold videocapillaroscopy (NVC), a well-established technique to evaluate outer skin layer vessels, power Doppler ultrasound (PDUS) has been recently used to study microcirculation in the inner levels [1].
Objectives: To study the severity of microvascular involvement in patients with SSc by using both NVC to measure capillary density (outer layer at the nailfold area) and PDUS to detect perfusion (deeper layers at the nailfold and pulp area).
Methods: 100 SSc consecutive patients fulfilling the 2013 EULAR classification criteria were enrolled. PDUS was performed at the 3rd and 4th finger of the dominant hand after exclusion of ulnar artery occlusion (UAO). In case of UAO non-dominant hand was examined. Ultrasound investigation was performed with Esaote MyLab 70 XVG by means of linear array transducer (10–22 MHz). Power Doppler settings were standardized (Doppler frequency 14.3 MHz, Gain 55%, PRF 750 Hz). PDUS measurements included sagittal scan of nailbed and fingertip qualitatively graded from 1 (no signal) to 4 (marked hyperemia) [2], and resistivity index (RI) of ulnar and radial proper digital arteries. Capillary density (number/mm) was calculated by NVC with magnification 200X performed on two images of the same digits examined by PDUS.
Results: 100 SSc patients, 87 (87%) women, 86 (86%) limited cutaneous SSc, median age 62.2 years old, median disease duration 8 years were evaluated. 7 (7%) patients had UAO. Concordance between fingertip and nailbed perfusion as assessed by PDUS is reported in Table 1.

Table 1

		Nailbed PDUS				Sum
		Grade 1	Grade 2	Grade 3	Grade 4	
Fingertip PDUS	Grade 1	15	19	3	1	38
	Grade 2	13	13	6	6	38
	Grade 3	3	5	10	10	28
	Grade 4	2	8	15	71	96
	Sum	33	45	34	88	200

Concordance between fingertip and nailbed perfusion as assessed by PDUS is equal to 0.7398. The lower 97.5% confidence interval limit is 0.6433.
Association between capillary density, and fingertip and nailbed perfusion as assessed by PDUS is shown in Table 2.

Table 2

	Capillary density	p-value of the difference between the mean of the category, with respect to reference (grade 1)
Fingertip PDUS		
Grade 1	2.895	
Grade 2	3.763	0.038
Grade 3	3.500	0.181
Grade 4	3.844	0.007
Nailbed PDUS		
Grade 1	3.212	
Grade 2	3.433	0.597
Grade 3	3.294	0.854
Grade 4	3.949	0.049

Conclusions: To our knowledge, this is the first study to correlate NVC and PDUS finding in SSc patients. Fingertip and nailbed PDUS grade concordance was found to be satisfactory. The mean capillary density tends to be greater with respect to grade 1. This is particularly evident comparing grade 4 and grade 1. As such, these two imaging techniques provide different and potentially complementary information on SSc-related peripheral microvascular involvement. There is potential clinical utility in these observations that has yet to be unlocked fully.
References:
[1] Lescoat A et al. Arthritis Care Res. 2016;Epub ahead of print.
[2] Newman JS et al. Radiology. 1996,198:582–584.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.3859

FRI0678 ULTRASOUND-GUIDED SYNOVIAL NEEDLE BIOPSY: SINGLE CENTER EXPERIENCE OF AN EMERGING, MINIMALLY INVASIVE TECHNIQUE IN CLINICAL PRACTICE AND RESEARCH

V.C. Romao[1,2], J. Polido-Pereira[1,2], R. Barros[1], E. Vieira-Sousa[1,2], R. Luís[3], E. Vitorino[3], F. Saraiva[1], J.E. Fonseca[1,2]. *[1]Rheumatology Department, Hospital de Santa Maria, CHLN; [2]Rheumatology Research Unit, Instituto de Medicina Molecular, Faculty of Medicine, University of Lisbon; [3]Pathology Department, Hospital de Santa Maria, CHLN, Lisbon, Portugal*

Background: Synovial biopsy remains an important tool in clinical practice and research for the study of synovitis. Ultrasound-guided needle biopsy (USNB) has recently emerged as a minimally invasive technique, which enables collection of high quality synovial tissue with very good patient tolerance.
Objectives: To report the experience with USNB in our department, since its introduction in late 2013.
Methods: We reviewed the clinical files of all patients who had an USNB in our department. Degree of US joint synovitis was evaluated on a semi-quantitative scale (0–3) in terms of synovial thickness (ST) and power Doppler (PD). Since 2015, we assessed patient tolerance and acceptance of the procedure using a standardized questionnaire, which includes visual analogue scales (VAS) of pain, stiffness and swelling of the biopsied joint. Changes in US and VAS scores were assessed using the Wilcoxon signed-rank test.
Results: Forty-eight patients had 53 USNB, mostly for diagnostic purposes (79%), performed by 4 different operators - Figure 1. All types of joints were biopsied, mostly medium sized (26 wrists, 7 ankles), but also large (3 knees, 4 shoulders, 6 elbows, 3 hips) and small (1 sternoclavicular, 1 naviculocuneiform, 1 metacarpophalangeal and 1 proximal interphalangeal) joints, 2 bursae (subacromial) and 1 tendon sheath. USNB was repeated in the same joint (wrist) twice in 3 patients and three times in one patient. Procedures were well tolerated, with 67% of patients classifying it as easy or very easy, 78% reporting no or only mild discomfort and 77% considering likely/very likely to accept to repeat the biopsy. An increase in analgesic medication in the days following the biopsy was reported by 13 out of 44 questioned patients. After a median of 8 days following the procedure, a significant decrease was observed in VAS scores of pain, stiffness and swelling of the biopsied joint, although 23%, 23% and 31% of the patients reported small increases in these scores (median 9.5, 11 and 10mm, respectively). There was no significant change in US scores pre- and post-biopsy, with only 3 and 2 patients having an increase in ST or PD scores, respectively. Biopsies were overall safe, with 6 minor immediate adverse events (11%). There were no cases of haemartrosis, joint/periarticular