entheses or increased inflammatory markers in the blood. The dominant leg was examined with US using a Logiq 9 (GE Medical, Milwaukee, WI, USA) with a ML 6–15 MHz transducer and a fixed pre-set with Doppler settings optimised for inflammatory flow. Both GS and Doppler examination were made.

The entheses were examined for hypoechogenicity, increased thickness, enthesophytes/ calcifications, erosions, and Doppler activity.

Results: No subjects had clinical signs of tendon or joint disease. Seven displayed various degrees of hypermobility and seven had various degrees of flatfoot; some in combination. None of the blood tests indicated any pathology.

On US erosions were only seen in one Achilles insertion (not shown in table). The Doppler activity was not measured in plantar fascia due to attenuation of the heel pad. All other US pathology present is seen in the table below.

Conclusions: Only minor pathological findings in the entheses of the lower limb were present in an age stratified cohort of healthy persons. The changes most frequently seen were bony changes in the insertion of the quadriceps and Achilles tendons. A weak tendency toward more pathological findings was seen in this cohort among men, compared to women, and additionally, with increasing age.

The findings suggest that US can be used to diagnose/examine subjects for pathological changes of the entheses although with caution regarding enthesophytes of the quadriceps and Achilles tendon.

References:

- [1] Terslev L et al. Defining enthesitis in spondyloarthritis by ultrasound: results of a Delphi process and of a reliability reading exercise. *Arthritis Care Res* 2014 May;66:741–8.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.3708

FRI0655 ULTRASOUND FINDINGS OF FEEDING VESSELS AND BONE SURFACE IRREGULARITY IN WRIST JOINTS OF HEALTHY CONTROLS

K. Misaki¹, K. Ikeda², K. Inoue¹. ¹Rheumatology, Kita-Harima Medical Center, Ono; ²Chiba University, Chiba, Japan

Background: Musculoskeletal ultrasound (MSKUS) is capable of visualizing synovitis and bone damage such as erosion. In particular, synovial vascularity as measured by power Doppler (PD) is correlated to rheumatoid arthritis disease activity, and PD signal reveals the prevalence of subclinical synovitis overlooked on physical examination. It is frequently difficult to distinguish bone erosion from normal concave surface of the bone. It is necessary for us to know these normal structures well in evaluating disease activity by using MSKUS. Here we examine the normal feeding vessels and bone surface irregularity in wrist joints.

Objectives: To clarify the distribution of feeding vessels in wrist joints and lunate surface irregularity of healthy controls by using MSKUS

Methods: The dorsal side of the bilateral wrists was scanned in 2 perpendicular planes with 2D-probe in healthy volunteers. The distribution and bilaterality of feeding vessels in the capsule and the extensor tendon sheath of wrist joint, and the evaluation of bone surface irregularity at lunate were validated.

Results: The distribution and bilaterality (Bl) of feeding vessels in healthy volunteers (n=30) were as follows:

Above-trapezoid (Rt:100.0%, Lt:100.0%, Blt:100.0%), intra-extensor digitorum tendon sheath (Rt:86.7%, Lt:66.7%, Blt:43.3%), intra-extensor digiti minimi tendon sheath (Rt:30.0%, Lt:30.0%, Blt:10.0%), above-capitate (Rt:23.3%, Lt:30.0%, Blt:10.0%), above-triangular fibrocartilage complex (Rt:16.7%, Lt:30.0%, Blt:6.7%), distal radial side of the radio-carpal joint (Rt:20.0%, Lt:23.3%, Blt:0.0%), distal end of the ulna (Rt:10.0%, Lt:16.7%, Blt:0.0%), dorsal side of the lunate (Rt:6.7%, Lt:0.0%, Blt:0.0%), palmar side of the extensor digitorum tendon sheath (Rt:0.0%, Lt:3.3%, Blt:0.0%). Feeding vessels from vascular channels were depicted at lunate (Rt:53.3%, Lt:46.7%, Blt:43.3%), the distal side of the

radius (Rt:20.0%, Lt:16.7%, Blt:3.3%), triquetrum (Rt:10.0%, Lt:16.7%, Blt:0.0%) and capitate (Rt:6.7%, Lt:10.0%, Blt:0.0%). The frequency of the bone surface irregularity at lunate in healthy volunteers (n=47) and the transverse diameter (TD) (Mean±S.D.) of those were Rt longitudinal plane:57.4% (TD1.26±0.33mm), Rt transverse plane: 51.1% (TD1.20±0.31mm), Lt longitudinal plane: 68.1% (TD1.06±0.28mm), and Lt transverse plane: 42.6% (TD1.29±0.31mm). Bilateral evaluation of those was 53.2%.

Conclusions: MSKUS evaluation in wrist joints revealed various normal vessels and bone surface irregularity of lunate. It is necessary to distinguish a normal pattern from a pathological pattern in MSKUS examination.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.3745

FRI0656 SEMIAUTOMATIC ANALYSIS OF EROSION VOLUME BY HR-PQCT IN PATIENTS WITH RHEUMATOID ARTHRITIS

K. Chiba¹, N. Iwamoto², M. Osaki¹, A. Kawakami². ¹Department of Orthopedic Surgery; ²Department of Rheumatology, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

Background: HR-pQCT is a high resolution CT dedicated to human extremities. It has been used mainly for osteoporosis, while in more recent years it has been applied to research in rheumatoid arthritis (RA).

Objectives: The purpose of this study is to develop a method to quantify the volume of erosions in RA patients semiautomatically using second generation HR-pQCT.

Methods: Twenty patients with RA (70±8 years, 15 female, 5 male) participated in this study. The second and third MCP joints were scanned using HR-pQCT (XtremeCT II, Scanco Medical, Switzerland) at the voxel size of 61µm.

The erosion volume was measured semiautomatically using the dedicated software (TRI/3D-BON, Ratoc System Engineering, Tokyo).

All concave regions on the bone surface around the MCP joints were extracted automatically by subtracting the bone region from the smoothed bone model. Erosions were selected manually by a medical doctor based on certain criteria. The volume of the erosions were measured by voxel counting.

Results: In a total of 37 joints (3 joints were excluded due to severe deformities), 40 erosions were detected by HR-pQCT (phalanx side: 9 erosions, metacarpal side: 31 erosions). The average volume of the erosions was 1.84mm³, minimum 0.08mm³, and maximum 16.3mm³.

Conclusions: The semiautomatic method to quantify the volume of erosions at MCP joints in RA patients by HR-pQCT was developed.

The opinion as to whether concave regions are pathological erosion or physiological concave, vascular channel or recess of osteophyte is occasionally difficult and should be performed by an experienced tester.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.4144

FRI0657 COMPARATIVE STUDY OF PAROTID ULTRASONOGRAPHY AND PAROTID GLAND ECT IN PREDICTING THE PATHOLOGICAL BIOPSY OF THE SALIVARY GLAND IN PATIENTS WITH PRIMARY SJÖGREN'S SYNDROME

C. Xiaomei, L. Cong, W. Lijun, L. Cainan, S. Yamei. Department of Rheumatology and Immunology, People's Hospital of Xinjiang Uyghur Autonomous Region, Urumqi, China

Objectives: To investigate the value of Parotid Ultrasonography and parotid gland radionuclide imaging in predicting salivary gland biopsy of primary Sjögren's syndrome (pSS).

Methods: Sixty - five patients with primary Sjogren 's syndrome and 38 patients with non - Sjogren 's syndrome were enrolled in the Department of Rheumatology and Immunology, Xinjiang Uygur Autonomous Region People 's Hospital from October, 2015 to June, 2016. All patients were accepted the check of Parotid Ultrasonography, Parotid Gland ECT and labial gland biopsy. The data were analyzed statistically.

Results: The sensitivity and specificity of Parotid Ultrasonography in pSS were 65% and 76%, respectively. The area under the ROC curve was 0.936±0.024 for the diagnosis of pSS. The positive predictive rate of parotid gland ultrasonography was 84.0% and the negative predictive rate was 94.4%. Parotid scintigraphy in pSS in the sensitivity of 80.0%, specificity of 69.1%. The positive predictive rate of parotid gland radionuclide imaging for labial gland biopsy was 78.9% and the negative predictive rate was 87.5%. The diagnostic value of Parotid

Ultrasonography in pSS group is superior to that of parotid gland radionuclide imaging, which can effectively reduce the complication of invasive operation.

Conclusions: The diagnosis of pSS by parotid gland ultrasonography is superior to that of parotid gland radionuclide examination. For patients with atypical clinical manifestations who are negative for anti-SSA and/or anti-SSB antibodies, there is no need for a labial biopsy of the labial glands to reduce the number of complications associated with unwanted invasive procedures.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.6257

FRI0658 LEG ELEVATION DOES NOT SUBSTANTIALLY AFFECT TBS RESULTS

D. Krueger¹, E. Siglinsky¹, D. Tran², L. Del Rio³, N. Binkley¹. ¹Osteoporosis Clinical Research Program, University of Wisconsin, Madison, United States; ²R&D, Medimaps, Merignac, France; ³CETIR Grupo Médico, Barcelona, Spain

Background: Lumbar spine dual energy X-ray absorptiometry (DXA) scans are typically acquired with the patient's legs elevated on a positioning block thereby flattening the normal lumbar lordosis. With GE densitometers it is also possible to acquire lumbar spine scans with the legs down. BMD values obtained with legs down vs. legs elevated does minimally differ, however it is unknown if leg elevation affects trabecular bone score (TBS) results.

Objectives: The purpose of this study is to assess the effect of leg position on TBS.

Methods: Lumbar spine (L1-L4) DXA scans were acquired in legs up and legs down positioning using GE Healthcare Prodigy and iDXA densitometers. The "OneScan" feature mode was not used. These scans were analyzed with enCORE software v 12.3 or 14.1. All scans were re-processed using Medimaps TBS Calculator v2.3 or TBS iNsite v3.0.2 to obtain TBS results. Linear regression and Bland-Altman analyses were performed to compare TBS results in the legs up vs. legs down position.

Results: Sixty-four women, mean age and BMI 65.1 years (range 28.2–86.6) and 26.4 kg/m² (range 18.1–34.8) were studied on three Prodigy densitometers. Fifty women, mean age and BMI 68.6 years (range 15.2–92.5) and 26.2 kg/m² (range 19.9–35.1) were studied on a iDXA densitometer. With Prodigy and standard legs up positioning, the L1-L4 BMD ranged from 0.738–1.549 g/cm² and was highly correlated with legs down positioning, R² = 0.99. TBS results ranged from 1.072–1.632 and were also highly correlated, R² = 0.93 with a mean bias of -0.005 TBS units between leg positions (Figure). With iDXA and standard legs up positioning, the L1-L4 BMD ranged from 0.753–1.622 g/cm² and was highly correlated with legs down positioning, R² = 0.97. TBS results ranged from 1.040–1.455 and were also highly correlated, R² = 0.90 with a mean bias of 0.00 TBS units between leg positions (data not shown).

Conclusions: Leg positioning minimally affects TBS results with GE Healthcare Prodigy and iDXA densitometers but the difference from legs up to legs down is likely of no clinical significance.

Disclosure of Interest: D. Krueger: None declared, E. Siglinsky: None declared, D. Tran Employee of: Medimaps, L. Del Rio: None declared, N. Binkley: None declared

DOI: 10.1136/annrheumdis-2017-eular.3120

FRI0659 INCLUSION OF THE ASSESSMENT OF CERVICAL FACET JOINTS IN THE m-SASSS SCORE IN PATIENTS WITH ANKYLOSING SPONDYLITIS. IMPROVING SENSITIVITY TO CHANGE

M.J. Moreno-Martínez¹, M.J. Moreno-Ramos², L.F. Linares-Ferrando³. ¹Rheumatology, H. Rafael Mendez; ²H. Virgen de la Arrixaca, MURCIA, Spain; ³Rheumatology, H. Virgen de la Arrixaca, MURCIA, Spain

Background: Ankylosing Spondylitis is characterized by axial involvement, especially of sacroiliacs and the vertebral bodies, although we also know that other such as facet joints (Fj) are affected. These joints can be seen with a simple x-ray, especially in the cervical spine. Despite their involvement, the different rates of radiographic progression do not assess their alteration.

Objectives: To evaluate the sensitivity to the change of the m-SASSS radiographic score by including the assessment of the cervical Fj.

Methods: The patients come from a Spondyloarthritis Unit (Hospital U. Virgen de

la Arrixaca de Murcia, Spain). All patients are diagnosed of Ankylosing Spondylitis (New York Modified Criteria)

The usual radiographic study was performed to calculate the m-SASSS and a lateral cervical radiograph at two different times to calculate the difference between the scores. The score used for Fj (only one score is given for each intervertebral segment) is:

- 0: normal.
- 1: pinching (narrowing of joint space).
- 2: sclerosis in the joint margins.
- 3: joint fusion.

We will analyze the mean of the two m-SASSS radiographic score, with (m-SASSS + Fj) and without the inclusion of the Fj, and the difference between those means. We will also analyze the correlation with the rest of the radiographic scores and with the clinical patient's parameters.

Results: We included 47 patients (81% male and 19% female) with a mean age of 48 (± 8) years and a mean duration of symptoms of 18 (± 8.5) years. The mean time between the two radiographic studies was 3 (± 1.5) years.

In the following table we show the difference of means of the radiographic scores over time:

	First mean (standard deviation)	Last mean (standard deviation)	Significance (p)
Radiographic evaluation of Fj	6±5,2	8,8±6,8	0,0001
m-SASSS	9,3±11,6	10,1±11,7	0,1
m-SASSS+Fj	15,4±13,4	19,3±13,5	0,0001

After comparing Δ mSASSS with Δ mSASSS+Fj, we found significant differences in favor of inclusion: 2.6 (± 2) vs 4.9 (± 4.7), p=0.04.

Conclusions: The inclusion of the evaluation of cervical Fj improves sensitivity to change of m-SASSS.

References:

- [1] Aaverns HL, Oxtoby J, Taylor HG, Jones PW, Dziedzic K, Dawes PT. Radiological outcome in ankylosing spondylitis: use of the Stoke Ankylosing Spondylitis Spine Score (SASSS). *Rheumatology*.1996;35(4):373–376.
- [2] Bleil J, Maier R, Hempfing A, Schlichting U, Appel H, Sieper J, et al. Histomorphologic and Histomorphometric Characteristics of Zygapophyseal Joint Remodeling in Ankylosing Spondylitis: Histomorphometric Characteristics of the Joints of AS Patients. *Arthritis Rheumatol*.2014;66(7):1745–1754.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.5136

FRI0660 IMPACT OF ULTRASOUND IN TREATMENT DECISION OF RHEUMATOID ARTHRITIS

M. Gutierrez¹, C. Pineda¹, R. Espinosa², C. Hernandez¹, L. Ventura¹, C. Lozada¹, L.H. Silveira³, G. Rodriguez², E. Cruz², A. Vargas³, C. Bertolazzi², A.C. Lozada¹. ¹Division of Musculoskeletal and Rheumatic Disorders; ²Instituto Nacional de Rehabilitación; ³Instituto Nacional de Cardiología, Mexico City, Mexico

Background: Ultrasound (US) is an important tool to support the clinician in the diagnosis and treatment monitoring of rheumatoid arthritis (RA). The EULAR recommended it for the follow up of RA patients. In spite of the evidence supporting the value of US, the real impact in treatment decisions is not clearly defined.

Objectives: To investigate the impact of US findings in the treatment decisions of rheumatologists in patients with RA in a real-life setting. Additionally, to verify the US findings that play a role in change of treatment, types of changes and their distribution.

Methods: RA patients were included. As a first step, the rheumatologist performed a clinical examination (including DAS28) and recorded the treatment approach suggested according his clinical evaluation (i.e. starting, changing or stopping pharmacological medication as well as local injection). In the same day, after the clinical assessment, the patients were sent for an US examination using the 7-joint score, which was performed by an independent rheumatologist sonographer who reported the US findings to the same rheumatologist that previously evaluated clinically the patient. This last decided, according to the US findings to maintain or change the previous suggested therapy. Additionally, the clinical rheumatologist reported the reasons which induced to change or not the treatment after the US examination

Results: A total of 128 RA patients were included [female 117 (91.4%), male 11 (8.59%)], with mean ± SD disease duration of 9.88±8.22 years. Ninety-four patients (73.4%) had active disease according the DAS 28, whereas 34 (26.5%) were considered in remission.

US findings influenced a change in the treatment in 56 cases (43.7%) (47 with clinical active disease and 9 in remission). Among the main reasons that induced a change in the treatment based on the US examinations were: grade of synovitis (25%), higher number of synovitis than clinical examination (16.6%) and presence of power Doppler (PD) (16.7%). The most frequent treatment changes were increasing dose or start a new combination of DMARDs [39 patients (69.5%)]. The multiple logistic regression analysis showed that synovitis of 2nd metacarpophalangeal joint (MCPJ) was the US finding with more influence in the decision to change treatment (p=0.016).