Methods: We conducted a cross-sectional study comparing MN US parameters of SSc patients followed up at our Rheumatology Unit and control subjects. Exclusion criteria included body mass index (BMI) > 30, previous wrist trauma and known diagnosis of carpal tunnel syndrome. Forty-eight out of 62 SSc patients and 45 healthy age and sex matched controls were enrolled. Subjects were consecutively evaluated in our Department. A General Electric LOGIQ S8 US with a 15 MHz linear transducer was used for assessment. MN cross-sectional area (MNA) and perimeter (MNP) of both sides of each person were measured at the level of the carpal tunnel inlet. For comparative analysis, the mean MNA and MNP of combined right and left side were used. Patients' relevant clinical and demographic data were collected. Modified Rodnan skin score (mRSS), hand mobility (HAMIS) and SSc Severity Scale (SScSS) were also assessed. Statistical analysis included Chi-Square test, Mann-Whitney U-test, Kruskal-Wallis and Spearman correlation coefficient. P value < 0.05 was defined as statistically significant.

Results: A total of 186 MN were assessed by US. Both groups had the same proportion of diabetes and history of tunnel carpal surgery ($p=0.803$ and $p=0.339$, respectively). Median of MNA and MNP were significantly higher in SSc patients (7.5 mm^2 [6.6 to 9.5] and 13.8 mm [12.4 to 15], respectively) (median [interquartile range]) compared with controls (7.0 mm^2 [6 to 8] and 12.9 mm [11.7 to 14], respectively) ($p=0.021$ and $p=0.018$, respectively). Higher mRSS correlated with higher MNA (Spearman's $\rho=0.335$, $p=0.02$) and MNP ($\rho=0.336$, $p=0.02$). Values of MNA and MNP did not correlate with age, disease duration, HAMIS and SScSS, and were similar according to categories of gender and subset of disease ($p>0.05$). However, median of MNA and MNP were significantly different between the 3 phases of skin involvement ($p=0.007$ and $p=0.009$, respectively), being higher in patients in the oedematous phase (median MNA of 9.25 mm^2 [7.5 to 11.5] and median MNP of 14.5 mm [13.5 to 16.9]).

Conclusions: Our study confirmed an increased MNA and MNP in SSc patients in comparison with healthy age and sex matched controls. Patients in the oedematous phase of skin involvement and patients with higher skin thickness assessed by mRSS showed higher MNA and MNP values.

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Disclosure of Interest: None declared

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FRI0653 SALIVARY GLAND ULTRASOUND IS RELATED TO AUTOIMMUNITY IN PRIMARY SJÖGREN SYNDROME

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Background: Primary Sjögren syndrome (pSS) is a systemic autoimmune disease involving exocrine glands, mainly ocular and salivary glands. Salivary gland ultrasound (SGU), of submandibular and parotid glands, in pSS is characterized by hypo/anechoic rounded areas within gland parenchyma, losing the normal homogeneity of the glands (typical SGU)¹. SGU is a reliable imaging technique for assessing gland echostucture in pSS².

Objectives: The aim of our study is to evaluate the relation between typical SGU and clinical and laboratory data in pSS

Methods: We performed SGU to 100 patients with pSS from our rheumatology department selected randomly from a database. We used a semiquantitative score from 0 to 3. Grades 0 and 1 were considered as normal and grades 2 and 3 were considered as typical for pSS. We retrospectively collected demographics (age, gender, disease duration), clinical (extra-glandular manifestations, parotid swelling and lymphoma) and laboratory data (ESR, CRP, rheumatoid factor (RF), antinuclear antibodies (AAN), anti-SSA and anti-SSB antibodies). We divided the patients into 3 groups depending on their autoimmunity profile. Complete seropositive group were patients with RF, AAN and antiSSA or antiSSB positives simultaneously or sequentially. Simple seropositive group were patients with any positive autoantibody (RF/AAN/antiSSA or antiSSB) but not all of them together. Finally, patients without positive autoantibodies were included in the seronegative group

Results: We excluded 7 patients because they were diagnosed with secondary SS. From 93 pSS patients analyzed, 32 (frequency 34.5%) had a typical SGU. Demographics, extra-glandular manifestations and lymphomas were similar between patients with typical SGU and patients with normal SGU. Parotid swelling and longer disease duration were associated with a typical SGU ($p<0.05$). Patients with positive autoantibodies (AAN, RF, antiSSA and antiSSB) had more frequently a typical SGU. Complete seropositive group had the highest frequency of typical SGU, followed by simple seropositive group. All seronegative patients had a normal SGU. SGU relation with autoimmunity is shown in table 1

Conclusions: Longer disease duration and parotid swelling were associated with typical SGU. Typical SGU was associated with positive autoimmunity, moreover all seronegative patients had a normal SGU

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	Total	Typical SGU	Normal SGU	p
n (%)	n=93	n=32	n=61	
Complete seropositive group	36 (38.7)	25 (78.1)	11 (18.0)	<0.001
Simple seropositive group	44 (47.3)	7 (21.9)	37 (60.7)	<0.001
Seronegative group	13 (14)	0	13 (21.3)	<0.001
AAN + (n:90)	70 (76.9)	31 (96.9)	39 (66.1)	0.001
RF + (n:92)	55 (59.1)	28 (87.5)	27 (44.3)	<0.001
Anti-Ro + (n:86)	46 (52.9)	27 (84.4)	19 (34.5)	<0.001
Anti-La + (n:86)	28 (33.3)	19 (63.3)	9 (16.7)	<0.001

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FRI0654 ULTRASOUND DETECTED PATHOLOGY IN THE ENTHESIS OF THE LOWER LIMB IN AN AGE STRATIFIED COHORT OF ASYMPTOMATIC SUBJECTS -A PROSPECTIVELY DESIGNED DESCRIPTIVE CROSS-SECTIONAL STUDY

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Background: Ultrasound (US) examination of the entheses is increasingly used to document pathological changes in e.g. psoriasis arthritis and spondyloarthritis. Grey-scale (GS) US is used to assess morphological changes and Doppler US to assess increased blood flow.

The OMERACT expert group has agreed on the following elementary components when assessing the entheses on US examination; hypoechogenicity, increased thickness, enthesophytes/ calcifications, erosions, and Doppler activity (1). Little is known about US assessment of the entheses in asymptomatic persons, thus the frequency and distribution of the above components between genders and age groups is uncertain.

Objectives: To investigate the frequency of enthesitis components in the entheses of the lower limb in a group of healthy subjects.

Methods: We recruited 64 subjects (32 women and 32 men), eight women and eight men in four decades, from 20 to 59 years. None of the subjects had previous or present signs of tendon or joint disease in the lower extremities. None of the participants took any kind of medication.

All subjects were examined by a rheumatologist and blood samples were collected to rule out any clinical signs of tendon or joint disease e.g. swollen and tender

	Age 20-29 (n=8/8)		Age 30-39 (n=8/8)		Age 40-49 (n=8/8)		Age 50-59 (n=8/8)		Total (n=64)
	F	M	F	M	F	M	F	M	
Quadriceps tendon									
Doppler activity		1				1		1	3(5%)
Enthesophyte/ calcifications	1	4	3	2	1	4	2	5	22(34%)
Increased thickness		1				1			2(3%)
Hypoechogenicity		1				1		1	3(5%)
Patella tendon proximal									0
Doppler activity									
Enthesophyte/ calcifications	1							1	2(3%)
Increased thickness			1				1	1	3(5%)
Hypoechogenicity			1				1	1	3(5%)
Patella tendon distal								1	1(2%)
Doppler activity									
Enthesophyte/ calcifications			1				1	1	3(5%)
Increased thickness			2		1	2	1	3	9(14%)
Hypoechogenicity			1		1	1	1	2	6(9%)
Achilles tendon									0
Doppler activity									
Enthesophyte/ calcifications	3	3	1	6	2	5	2	4	26(41%)
Increased thickness		1		3		1		1	6(9%)
Hypoechogenicity									0
Plantar fascia							1		1(2%)
Enthesophyte/ calcifications									
Increased thickness	1	1		2	1	2	1		8(13%)
Hypoechogenicity	1			1		1			3(5%)

F, female; M, male. All empty fields have the value 0.

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 fat 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.

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

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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

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

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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

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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

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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