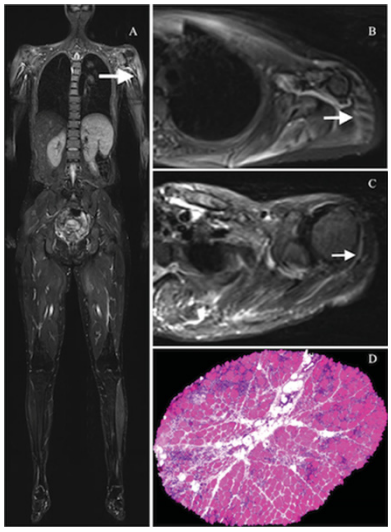
to the disease activity. The presence of oedema, fatty replacement and fascial oedema was evaluated in the biopsied muscle. Muscle and fascial inflammation was scored using a 0–3 point scale. The extent of muscle involvement was also evaluated by the analysis of 12 to 14 axial images and a percentage of muscle volume was calculated. Fatty replacement was scored using a 0–3 point scale. Muscle biopsies were evaluated by two trained pathologists at the HCB. Muscle biopsies were routinely processed. Quantification of fiber necrosis, regeneration and inflammation infiltrate were recorded. All statistical analyses were performed using "SPSS v22.0 ®". In all statistical tests performed p value of 0.05 was considered significant.

Results: A total of 16 (13 female) patients were included. Except in one patient all of them had proximal muscle weakness, and all of them except one had typical DM skin lesions. In 12% of the patients a solid cancer was diagnosed. All patients had fascial edema at muscle MRI while no one had fatty replacement, and 65% had muscle oedema. Only one biopsy was normal. A significant correlation was found between muscle inflammation and MRI muscle edema (p=0,036) and the percentage of volume muscle involvement at MRI (p=0,027). Muscle necrosis was seen in those patients with moderate and severe fascial edema compared with those with mild fascial edema (p=0,032). More regenerating cells were seen in those patients with moderate and severe muscle edema compared with negative or mild muscle oedema (p=0,018).



Conclusions: A strong and significant correlation between histological and imaging findings was found. Fascial and muscle edema were the predominant findings in DM patients

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SAT0646 COMPARISON OF US, CT, X-RAY AND MRI EFFICACY FOR SEQUENTIAL ASSESSMENT OF CHRONIC GOUT MANIFESTATIONS

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Background: Ultrasonography (US), magnetic resonance imaging (MRI), computed tomography (CT), and X-ray are the alternative diagnostic modalities used to identify affected joints and surrounding tissues (tophi, erosions and synovitis) in gout patients, but the potential of each method for sequential assessment of disease regression in pts receiving urate-lowering therapy is not sufficiently studied [1]

Objectives: Comparison of US, CT, X-ray and MRI efficacy for sequential assessment of affected joints in pts treated with urate-lowering agents.

Methods: The open prospective study was conducted in 2013–2015 yy at V.A. Nasonova Research Institute of Rheumatology. 22 pts with crystal-verified gout (4 (15%) f and 18 (85%) m), mean age – 54,5±12,7 years, were included. The dose of allopurinol administered in all pts was adjusted by titration starting from 100 mg/day. Instrumental diagnostic examination (US, MRI, CT and plain X-ray of knee joints) was performed at baseline and after one year of follow up. US of knee joints was performed using multi-frequency linear array transducer, at 7 to 17 MHz frequencies; for MRI examination "Esaote Artrosan 0.25TI" was used, GE "Light Speed" - for CT scans, and Stephanix – for plain X-ray examination. Applied descriptive statistics STATISTICA 10.0 (StatSoft/Inc., USA) package was used for statistical analysis.

Results: Mean serum level of uric acid decreased from 568±115 μmol/l to 302±135 μmol/l. The target level (<360 μmol/l) was achieved in 20 pts (91%), (<300 μmol/l) was achieved in 11 pts (50%). Median allopurinol dose was 400 [300; 600] mg/day, 9 (45%) pts had to take 600 mg/day and more. At baseline US examination detected periarticular tophi in 13 (59%) pts, MRI - in 6 (28%) pts, CT in 3 (14%), X-ray - 1 (5%) pts, after one year - by US in 9 (41%) pts and MRI - 3 (14%) pts, CT in 2 (9%), X-ray - 1 (5%) pts. At baseline intraosseous tophi were detected only by CT and X-ray in 18 (81%) and 2 (9%) pts respectively, after one year 17 (77%) pts and 3 (14%) pts respectively. At baseline erosions were detected in 19 (86%) pts by MRI, in 11 (50%) pts – by US, in 14 (65%) pts – by CT, and in 9 pts (41%) – by X-ray, after one year in 14 (64%) pts by MRI, 10 (45%) pts by US, 12 (54%) pts by CT, 8 (36%) pts by X-ray. At baseline synovitis was reliably diagnosed by MRI and US: in 15 (68%) pts and 17 (77%) pts, after one year in 2 (9%) pts and 3 (14%) pts respectively

Conclusions: MRI and US, as for synovitis, erosions and tophi dynamics, are comparable, at that for erosions MRI is more accurate. CT is the most informative approach to monitor intraosseous tohhi regression. X-ray is low- informative modality for sequential assessment of gout.

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Disclosure of Interest: None declared

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SAT0647 LASER DOPPLER IMAGING: AN OBJECTIVE OUTCOME MEASURE FOR ASSESSMENT OF CUTANEOUS LUPUS ERYTHEMATOSUS

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Background: Cutaneous lupus erythematosus (CLE) is the most common manifestation of SLE and may occur without systemic features. Skin disease is particularly heterogeneous, rendering assessment of activity difficult. Laser Doppler imaging (LDI) is a non-invasive imaging tool that monitors blood perfusion in dermal tissue. It has been shown to correlate with inflammation in psoriasis but no study has been undertaken in CLE.

Objectives: To evaluate validity of LDI against the gold standard of histology from skin biopsy as well as other clinical tools including the Revised Cutaneous Lupus Erythematosus Disease Area and Severity Index (RCLASI) and Visual Analogue Scale (VAS) scoring of photographs.

Methods: A prospective observational study was conducted in consecutive patients with CLE flare at a single centre. Disease activity was assessed using RCLASI and measured using a high resolution LDI system (Moor Instruments) by JB and YY, both blinded to clinical assessment. Relative difference to the non-lesion area was calculated and expressed in perfusion unit (PU). Skin biopsy was obtained in those who consented and scored as 0=non-active, 1=mild activity and 2=active. Photographs were taken on the same day and were later assessed by a dermatologist and a rheumatologist who were blinded to LDI results using a 100mm VAS. The agreement of VAS between both clinicians was analysed using Bland-Altman limits of agreement (LOA) and the correlation between histology and LDI, RCLASI and VAS were analysed using Kendall's Tau-a.

Results: 20 patients were studied (19 female, median age 47.2 (range 21–62) years, 6 smokers, 2 CLE only, 14 (70%) ANA positive at the time of the scan). The distribution of CLE type were: acute CLE=7, subacute CLE=6 and chronic CLE=7. The agreement between the VAS scores of the two clinicians was fair; mean difference 7.8 (95% CI LOA -26 to 42) mm versus average. In 10 patients with skin biopsy, the correlation with histology was better for LDI (tau-a=0.56) than RCLASI [-0.09; difference (90% CI) 0.64 (0.10, 1.19)] or VAS [-0.16; 0.71 (0.13, 1.29)] (figure 1). One patient who was deemed to have a subacute CLE flare based on clinical assessment indeed had a negative histology and a low PU.

Conclusions: In this preliminary analysis, assessment of blood perfusion to dermal tissue using LDI provides a valid quantitative and objective measure of inflammation in cutaneous lupus. The findings from LDI also had a better correlation with histology from skin biopsy compared to currently used clinical tools. Further validation and longitudinal analysis including assessment of responsiveness to therapy will provide further evidence on the usefulness of LDI in clinical practice and trials.

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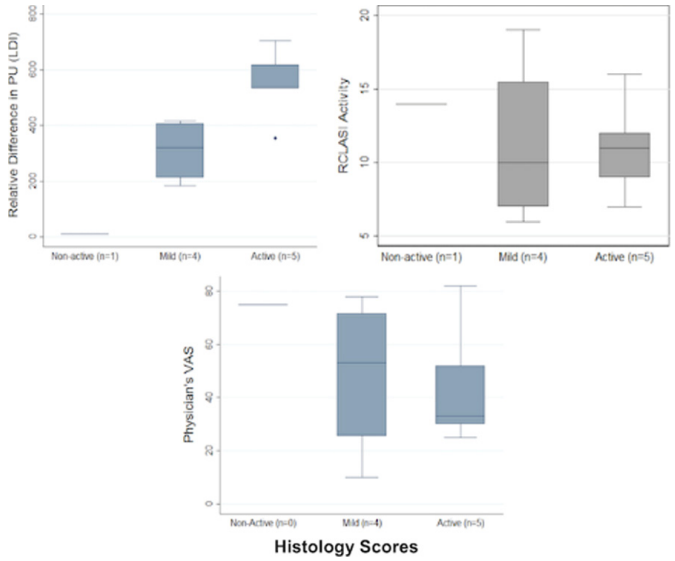

Disclosure of Interest: None declared
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SAT0648 ULTRASOUND FINDINGS IN SYMPTOMATIC AND ASYMPTOMATIC JOINTS IN PATIENTS WITH GOUT

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Objectives: To determine sensitivity and specificity of ultrasound (US) findings for gout: "double contours" (DC) and hyperechogenic aggregates (HAGs) of symptomatic and asymptomatic joints in patients with gout.
Methods: This prospective study included 69 persons (34 patients with primary gout and 35 healthy subjects). Including criteria for patients with gout were: age ≥18 years; diagnosis of primary gout; absence of acute gout attacks during the study tests; the absence of any other inflammatory and infectious joint disease, and secondary gout. The research included: demography and medical history. Physical and US examination covered following structures: 138 radiocarpal joint, 276 patellar and triceps tendon and 414 articular cartilages (first metatarsal, talar and femoral condyle).
Results: Both groups were compatible for age and gender. In the gout group 124 (30%) symptomatic and 284 (70%) asymptomatic joints were found and in healty group all joints was asymptomatic. The sensitivity of the DC for symptomatic joint was 56 to 84% and specificity also was very high 91 to 94% as well as positive and negative predictive value (69 - 86% and 38 - 71%). Sensitivity of DC finding for the asymptomatic joints was 42 to 73% and specificity was 91 to 94%, with also high positive and negative predictive value (69 - 89% and 44 - 62%). The specificity of the HAGs for both symptomatic and asymptomatic joints was very high 99% but sensitivity of HAGs symptomatic structures was moderate (41 do 56%), while its sensitivity for asymptomatic structures was low (18 to 34%), table 1.

Table 1

Structure		Sensitivity (%)	Specificity (%)	"Cut-off"	PPV (%)	NPV (%)
Symptomatic	DC	56–84	91–94	0.50	69–86	38–71
	HAGs	41–56	98–99	0.50	69–89	44–62
Asymptomatic	DC	42–73	91–94	0.50	58–86	38–71
	HAGs	18–34	98–99	0.50	49–75	31–60

DC - "double contours"; HAGs - hyperechogenic aggregates; PPV - positive predictive values; NPV - negative predictive values.

Conclusions: Ultrasound examination of symptomatic and asymptomatic joints in patients with gout equally observed structural changes characteristic of gout. The finding of "double contours" in the symptomatic and asymptomatic joints has a very high sensitivity and specificity. Consequently, future research should be focused on the ultrasound examination of asymptomatic joints in patients with gout.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.4199

SAT0649 CHANGES IN CARTILAGE QUALITY (DGEMRIC) FOLLOWING KNEE JOINT DISTRACTION OR HIGH TIBIAL OSTEOTOMY: A TWO-YEAR FOLLOW-UP

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Background: Since abnormal loading can cause onset and progression of OA, unloading the affected compartment of an osteoarthritic knee, should slow down OA progression, or even enable joint repair. High tibial osteotomy (HTO) is a well-known unloading approach for treating unilateral compartment osteoarthritis (OA) with mechanical axis deviation. Transient unloading using knee joint distraction (KJD) has demonstrated a progressive decrease in pain, normalization of function, and an increase in cartilage thickness[1]. Although both treatments show indications of joint repair, there is limited information about the actual quality of the regenerated tissue.
Objectives: To evaluate the change in quality of the repaired cartilaginous tissue using dGEMRIC after KJD or HTO treatment.
Methods: 40 patients (20 with KJD, and 20 with HTO), treated for medial tibiofemoral OA, are included in this study. Radiographic changes, clinical changes, and changes in cartilage quality are evaluated after one and two years follow-up. Joint space width (JSW) is evaluated on weight-bearing radiographs. Clinical improvement is evaluated by Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and Visual Analogue Scale (VAS) pain score. In order to evaluate the quality of the (newly formed) cartilaginous tissue, quantitative MRI analysis, in the form of Delayed gadolinium enhance Magnetic Resonance Imaging of cartilage (dGEMRIC) is performed.
Results: A significantly increased medial (Δ1.15 mm,p<0.000), minimal (Δ0.93 mm,p<0.000) and mean (Δ0.79 mm,p=0.003) JSW one year after KJD, sustaining up until 2 years, was demonstrated (medial (Δ0.99 mm,p=0.002), minimal (Δ1.04 mm,p<0.000), mean JSW (Δ0.68 mm,p=0.027)). Similarly, medial (Δ0.49 mm,p=0.017) and minimal (Δ0.32 mm,p=0.023) JSW were significantly increased one year after HTO, sustaining up until 2 years (medial: Δ1.03 mm,p<0.000, minimal: Δ0.72 mm,p=0.015), after which mean JSW (Δ0.46 mm,p=0.030) is also significantly increased. Both interventions led to clinical improvement, observed as an increase in WOMAC after one year (KJD: Δ36.89,p<0.000, HTO: Δ33.74,p<0.000) and two years (KJD: Δ32.52,p<0.000, HTO: Δ24.19,p=0.002), and a decrease in VAS Pain, after one year (KJD: Δ-30.79,p=0.001, HTO: Δ-41.89,p<0.000) and two years (KJD: Δ-30.50,p=0.004, HTO: Δ-34.64,p<0.000). However, no statistically significant changes in cartilage quality were found after KJD or HTO, not in the medial and lateral compartments of the tibiofemoral joint, nor in the separate ROIs (see figure 1).

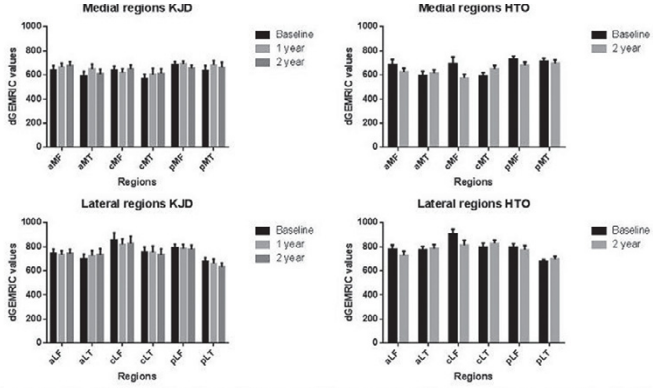

Figure 1: Average dGEMRIC indices (in ms) for the six ROIs of the medial and lateral compartment at baseline and after follow-up.

Conclusions: Treatment of medial compartmental OA by either HTO or KJD leads to alleviation of pain and recovery of function, achieved one year after either intervention, and maintained for another year. Within the first year after treatment, KJD shows a statistically significantly higher increase in WOMAC as compared to HTO. Both treatments led to a statistically significant increase in JSW after one and two years, postponing the natural osteoarthritis progression rate. No statistically significant change in the quality of newly formed cartilaginous tissue could be detected by dGEMRIC.
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Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.3400

SAT0650 [18F]FLUORO-PEG-FOLATE PET: A NOVEL IMAGING TECHNIQUE TO VISUALIZE RHEUMATOID ARTHRITIS

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Background: Imaging arthritis activity in rheumatoid arthritis (RA) patients using PET macrophage tracers holds promise for both early diagnostics and monitoring response to therapy (1,2). Previously, (*R*)-[^{11}C]PK11195 has been used, but this macrophage tracer is limited due to high background uptake, especially in bone and bone marrow. Recently, a novel macrophage tracer, [^{18}F]fluoro-PEG-folate,