tendon and the plantar aponeurosis. Correlations between clinical, activity and US scores were investigated by SPPSS software.

Results: A total of 208 patients were included. At examination 88.9% had an active disease and 64.4% of SpA were taking NSAIDs. 6240 entheses were assessed clinically and with US. A positive correlation was found between activity scores and two clinical scores (Peripheral Enthesitis Score, SPARCC). A good correlation was found between Activity scores and all US scores on one hand and with SPARCC scores and PES scores on the other hand. For US and clinical correlations, only Doppler scores was positively correlated with 2 clinical scores (SPARCC and PES scores), Acute Enthesitis scores was correlated with the PES scores. No correlation was found between clinical scores and MASEI or SES scores. No correlation was found with the mean enthesitis VAS scores.

Table 1. Correlations between clinical scores and activity scores with ultrasound scores

scores	PES	VASm Enthestis	SPARCC	ASDAS-vs	ASDAS-crp
Acute Enthesitis	r: 0,14	r: -0,03	r: 0,16	r: 0,43	r: 0,52
	p: 0,04	p: 0,72	p: 0,07	**p<0,001**	**p<0,001**
Chronic Enthesitis	r: 0,07	r: -0,15	r: 0,06	r: 0,19	r: 0,22
	p: 0,30	p: 0,03	p: 0,41	**p: 0,006**	**p: 0,002**
Global Enthesitis	r: 0,15	r: -0,08	r: 0,13	r: 0,43	r: 0,52
	p: 0,03	p: 0,24	p: 0,07	**p<0,001**	**p<0,001**
Doppler Enthesitis	r: 0,16	r: -0,001	r: 0,18	r: 0,34	r: 0,36
	p: 0,02	p: 0,99	**p: 0,01**	**p<0,001**	**p<0,001**
MASEI	r: 0,09	r: -0,08	r: 0,12	r: 0,44	r: 0,34
	p: 0,19	p: 0,23	p: 0,07	**p<0,001**	**p<0,001**
SES	r: 0,04	r: -0,04	r: 0,09	r: 0,31	r: 0,38
	p: 0,55	p: 0,59	p: 0,18	**p<0,001**	**p<0,001**

Table 2. Correlations between clinical scores and activity scores

	PES	VASm Enthestis	SPARCC
ASDAS-vs	r: 0,32	r: -0,04	r: 0,27
	p<0,001	p: 0,62	**p<0,001**
ASDAS-crp	r: 0,31	r: -0,03	r: 0,27
	p<0,001	p: 0,62	**p<0,001**

Conclusions: All US enthesitis scores were correlated with disease activity scores but those correlated with the clinical symptoms and not with its intensity were: Acute Enthesitis Scores, Global Enthesitis Scores and especially Doppler signal Enthesitis Scores.

Disclosure of Interest: None declared

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SAT0624 QUANTITATIVE 3D IMAGING OF TENOSYNOVITIS AND BONE MARROW EDEMA BY DCE-MRI IS A SENSITIVE MEASURE OF RESPONSE TO THERAPY IN RHEUMATOID ARTHRITIS

C. Roberts[1], G. Guillard[2], M.A. Bowes[2], J. Burlison[2], A. Khan[2], N. Maguire[1], S. Gotla[1], A. Morgan[1], G.J. Parker[1,3], R. Hodgson[3,4], J. Freeston[4], E.M. Vital[4], P. Bird[5], P. Emery[4], P.G. Conaghan[4]. *[1]Bioxydyn; [2]Imorphics; [3]Centre for Imaging Sciences, University of Manchester, Manchester; [4]University of Leeds, Leeds, United Kingdom; [5]Combined Rheumatology Practice, Sydney, Australia*

Background: Quantitative analysis of tissue microvascular function using dynamic contrast-enhanced MRI (DCE-MRI) shows promise for improved understanding of synovial pathophysiology in rheumatoid arthritis (RA). Assessing tenosynovitis and bone marrow edema (BME) using physiologically-interpretable measures such as *K*trans may offer additional insights; this will require increased precision in quantification.

Objectives: To apply a 3D DCE-MRI method to quantify capillary permeability (K^{trans}) in tendons, bone marrow edema, and to explore muscle involvement. To generate precise and consistent 3D regions of interest (ROI) of tenosynovitis and BME using active appearance models (AAMs)? and evaluate response to therapy within these regions.

Methods: MR images of the hand were acquired in 27 patients with established RA who had recently commenced the same biological therapy. Subjects were imaged at 0,3,6 months. The MRI protocol included pre- and post-contrast high-resolution 3D FLASH acquisitions. The DCE-MRI scan protocol included T1 mapping sequences followed by 15 sequential volumes acquired over 5 minutes, during which a bolus of gadolinium (0.1 mmol/kg) was administered at 2 ml/s at the beginning of the 5th volume measurement. The Extended Kety model was applied to each voxel concentration-time series within ROIs, allowing voxelwise estimates ofK^{trans}. Pre-contrast T1-weighted mages were searched using 3D active appearance models (AAMs) to reliably identify tendons and their sheath in the carpal tunnel region as well as bones and marrow area. Images from the dynamic series were registered to the high-resolution pre-contrast images, providing standardised 3D ROIs for each of the regions. Median K^{trans} was summarised in each patient for each ROI. T-test ($p<0.05$) determined significant differences from baseline.

Results: Differences in baseline *K*trans were observed in each tissue type and demonstrated that highest levels of inflammation within the synovium, followed by tenosynovitis, BME and detection of low grade inflammation in the muscle (Fig. 1). Significant post-therapy responses in *K*trans, indicating a reduction in perfusion and capillary permeability associated with reduced inflammation, were seen in each of these tissue types (Fig.1). RAMRIS scoring showed no significant change at either 3 or 6 months. 3D visualisation of *K*trans in tenosynovitis revealed additional spatial response to the biological treatment (Fig. 2) – most of the remaining tenosynovitis at 6 months had lower permeability with almost all of the higher permeability class of synovitis disappearing after therapy.

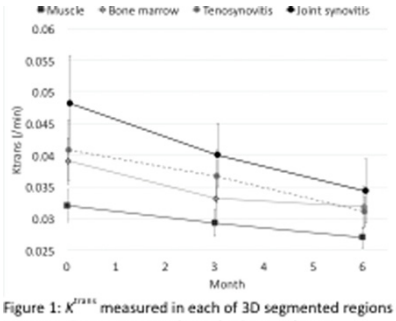

Figure 1: K^{trans} measured in each of 3D segmented regions of interest. Group mean and standard error shown.

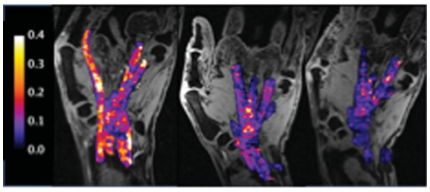

Figure 2: K^{trans} (/min) maps overlaid on post-contrast T_1-weighted images from an example patient imaged at baseline (left), 3 months post-therapy (centre) and 6 months (right).

Conclusions: 3D DCE-MRI measures of tenosynovitis and bone marrow edema are practical in RA MR imaging trials, and offer sensitivity to change and differential tissue response not visible with other methods. Therapy-induced response in muscle suggests that there may be an inflammatory process in RA affecting local muscle groups.

Disclosure of Interest: None declared

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SAT0625 ULTRASOUND ASSESSMENT OF JOINTS AND ENTHESIS IN A COHORT OF PATIENTS AFFECTED BY OCHRONOSIS: HOW COMMON IS INFLAMMATION?

C. Toscano[1], V. Di Sabatino[1], A. Adinolfi[1], M. Bardelli[1], V. Picerno[1], E. Selvi[1], A. Santucci[2], M. Galeazzi[1], B. Frediani[1], G. Filippou[1]. *[1]Department of Medicine, Surgery and Neuroscience; [2]Department of Biotechnology, Chemistry and Pharmacy, University of Siena, Siena, Italy*

Background: Ochronosis, the musculoskeletal manifestation of alcaptonuria (AKU), is characterized by alterations of the spine and large joints of the limbs similar to those of osteoarthritis. However, some cases of spinal involvement that resembles spondiloarthritis (SpA) have been describe, suggesting a prevalent inflammatory involvement of the joints.

Objectives: To evaluate the prevalence of inflammatory abnormalities in peripheral joints and enthesis of a cohort of patients affected by AKU.

Methods: consecutive patients with definite diagnosis of AKU (with or without clinical manifestations) referred at our clinic from 2014 to 2016 were enrolled. All patients underwent a US examination of the following sites bilaterally: metacarpo-phalangeal joints (MCP), proximal interphalangeal joints (PIP), radiocarpal/mid carpal joints, elbow, gleno-humeral, hip, knee, ankle and metatarso-phalangeal (MTP) joints; flexor and extensor tendons of fingers and wrist and the ankle tendons. Further, the enthesis of the rotator cuff of the shoulder, triceps, quadriceps, patellar and Achilles tendon were assessed. Joints and tendons with a synovial sheath were assessed for effusion, synovial hypertrophy and power Doppler (PD) signal while enthesis were evaluated for the presence of PD signal, enthesophytes and calcifications. All the US lesions were scored using a dichotomous scale (presence/absence). All US exams were performed by an expert sonographer blind to clinical history, using an Esaote MyLab70 scanner equipped with high resolution linear probes.

Results: 11 patients (6 women) were enrolled in this study with a mean age of 57 yo (SD±11,50). the mean number of joints with effusion was 3,9 for each patient (median 3, range 2–8) while the mean number of joints with synovial hypertrophy was of 2,9 (median 2, range 2–7). =0,18 joints (median 0, range 0–2) presented also PD signal. I The mean number of exudative tenosynovitis was0,81 (median 2, range 0–3) while proliferative tenosynovitis (mean 0,54, median 0, range 0–2) and PD in tendons with sheaths (mean 0,27, median 0, range 0–2) were rare. Finally, the mean number of enthesis with PD was 1,27 (median 1, range 0–7), the mean number of enthesophytes was 0,63 (median 0, range 0–3) and for calcifications 4,27 (median 5, range 1–8).

Conclusions: Ochronotic arthropathy is believed to be characterized by a widespread articular damage, correlated mainly to degenerative processes due to the deposition of Homogentisinic Acid in the joints. The results of this US study

showed that joint inflammation is common in ochronotic patients, associated in some cases with peripheral enthesis involvement confirming previously published data (1). The prevalence and the characteristics of the inflammatory manifestations should be further studied in larger cohorts of patients as they could play an important role in the joint damage process in these patients and provide a rationale for the use of new drugs.

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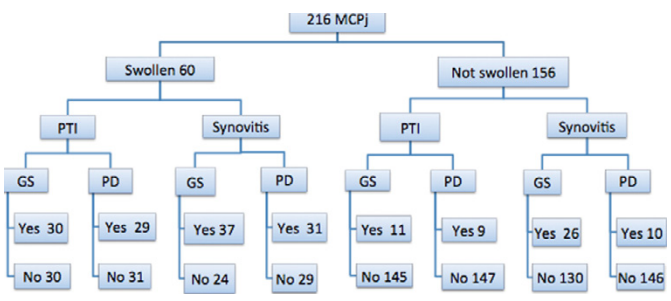
SAT0626 METACARPOPHALANGEAL JOINT SWELLING IN PSORIATIC ARTHRITIS: WHAT DOES IT MEAN?

C. Macía[1], S. Falcao[2], M. Gutierrez[3], J. Medina[4], H.B. Hammer[5], E. De Miguel[6]. *[1]Rheumatology, Hospital Universitario Severo Ochoa, Madrid, Spain; [2]Rheumatology, Chronic Diseases Study Center (CEDOC), NOVA Medical School, UNL, Lisboa, Portugal; [3]Rheumatology, Division of Musculoskeletal and Rheumatic Disorders. Instituto Nacional de Rehabilitación, Mexico City, Mexico; [4]Rheumatology, Hospital Clínico Universitario, Valladolid, Spain; [5]Rheumatology, Diakonhjemmet Hospital, Oslo, Norway; [6]Rheumatology, Hospital Universitario la Paz, Madrid, Spain*

Background: Clinical metacarpophalangeal joint (MCPj) swelling is a frequent finding in psoriatic arthritis (PsA). It is assumed to be caused by intra-articular synovitis (IAS). However, ultrasound (US) have also demonstrated in PsA peritenon inflammation of the extensor digitorum tendon (PTI).To date the data about the significance of this two lesions (IAS and PTI) in MCPj swelling are sparse.
Objectives: Our objective was to explore PTI and IAS as the cause of clinical MCPj swelling in PsA patients.
Methods: 27 consecutive non selected PsA patients, fulfilling CASPAR criteria, with clinical involvement of at least one 2nd to 5th MCPj were included. A MyLab 70 XVG machine, Esaote, Genova, Italy, with a greyscale (GS) 13 MHz probe, and a 7.1 MHz power Doppler (PD) frequency (PRF 750 Hz, Gain 60) was used. Videos (3–5 sec) of each MCPj 2nd to 5th of both hands in transversal and longitudinal views were obtained for central reader analysis, scoring US as presence or absence in GS and PD of: 1) PTI (defined as an hypoechoic swelling of the soft tissue surrounding the extensor tendon at MCPj level with or without PD) and 2) IAS (OMERACT definition). US pathology for each joint and lesion was defined as at least three of five central readers having the same score. SPSS analysis was performed for frequencies, percentage of agreement and Cohen's Kappa test.
Results: 27 PsA patients with a mean (SD) age of 56 (11) years and disease duration 109 (101) months were included. Isolated peripheral involvement was present in 21 patients (78%) and 6 (22%) had both axial and peripheral affection. Mean (SD) CRP level was 8.3 (8.2) mg/l and ESR 21.9 (19.3) mm. The mean DAS28 ESR was 3.88 (1.23). Psoriasis involvement included skin and nails in 15 (55.5%) of the patients.
A total of 216 MCPj were examined, with 60 (27,7%) being clinically swollen. The figure illustrates the agreement between clinical and US assessments, and the table shows the kappa values for the agreements. PTI in at least one MCPj was found in 19/27 patients (70%) with a total of 41/216 locations (19%) in GS. For IAS, there was GS in at least one MCPj in 23/27 patients (85%) with a total of 63/216 locations (29%). 28 of 41 (68.3%) joints had both PTI and IAS.

Table 1. US findings versus Clinical joint swelling

	Agreement n (%)	Kappa
Any US lesion (vs. clinical swelling)	167/216 (77.3%)	0.471
Any grey scale lesion (vs. clinical swelling)	166/216 (76.8%)	0.426
Any power Doppler lesion (vs. clinical swelling)	169/216 (78.2%)	0.550
Grey scale IAS (vs. clinical swelling)	166/216 (76.8%)	0.426
Power Doppler IAS (vs. clinical swelling)	177/216 (81.9%)	0.499
Grey scale PTI (vs. clinical swelling)	175/216 (81.0%)	0.474
Power Doppler PTI (vs. clinical swelling)	176/216 (81.5%)	0.478



Conclusions: Our study identifies two different US lesions (IAS and PTI) causing clinical joint swelling. PTI is near as frequent as IAS as a cause of MCPj swelling, and future studies are necessary to explore the added value of assessing PTI for prognosis or treatment.

Disclosure of Interest: None declared
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SAT0627 MUSCLE BIOPSY: MASTER ROLE IN DIFFERENTIAL DIAGNOSIS IN PATIENTS WITH SUSPECTED MYOPATHY

D. Santos-Faria, J. Sousa-Neves, M. Cerqueira, J.L. Silva, J.R. Rodrigues, D. Peixoto, J. Tavares-Costa, S. Alcino, C. Afonso, F. Teixeira. *Rheumatoloy, Unidade Local de Saúde do Alto Minho, Ponte de Lima, Portugal*

Background: The muscle biopsy may be a fundamental technique in the suspicion of myopathy, with high specificity to distinguish between normal or abnormal muscle tissue. In association with clinical and laboratory findings, the muscle biopsy has an important role to a more accurate diagnosis.
Objectives: To evaluate the usefulness and safety of muscle biopsies performed in a Rheumatology Unit in patients with suspected myopathy.
Methods: Retrospective analysis of the clinical charts of patients submitted to muscle biopsy between January 2010 and December 2016 at our Rheumatology Unit. Demographic, clinical, laboratory, electromyographic and histological data were collected. The histological study was performed in a Neuropathology Specialized Unit.
Results: A total of 46 patients, 19 men and 27 women, with a mean age of 53.3±17.1 years, were evaluated. Clinical manifestations included muscle weakness, myalgia and decreased muscle strength. Most patients also had increased muscle enzymes, particularly creatine kinase, but in a patient with generalized muscle atrophy, muscle enzymes were overall diminished. Of the 46 biopsies, 12 (26.1%) did not show alterations, 8 (17.4%) showed nonspecific alterations and only 1 biopsy was not conclusive because the sample was inadequate. In 4 patients, the histological features did not present specific characteristics of a myopathy, but revealed a preferential atrophy of type 2 fibbers, usually associated with prolonged corticosteroid therapy. Among the others, 9 (19.6%) were compatible with inflammatory myopathies, namely polymyositis (6), dermatomyositis (1), inclusion body myopathy (1), and localized nodular myositis (1). In the latter case, the patient had a different clinical presentation, with intermittent episodes of pain, oedema and flushing of different muscle groups. In addition, 5 metabolic myopathies (2 McArdle's diseases and 3 non-specific metabolic disorders), 2 muscular dystrophies (1 Becker's muscular dystrophy and 1 dystrophinopathy), 1 suspected case of myotonic dystrophy and 1 myopathy associated with statins use were diagnosed. In a patient with muscle weakness and prior diagnosis of systemic vasculitis, the histology showed a chronic inflammatory process with no specific alterations. In the patient with overall decrease in muscle enzymes, the biopsy revealed neurogenic atrophy, without inflammatory infiltrates. Overall, the results of electromyography (EMG) did not correlate with the histological findings, because EMG identified alterations both in cases with histologically compatible inflammatory myopathy and in cases without histological pathology. On the other hand, EMG did not reveal any changes in some of the metabolic myopathies. Muscle biopsies were performed mainly in the deltoid muscle. There were no relevant immediate or late complications with this technique.
Conclusions: Although muscle biopsy is an invasive technique, it is a safe technique and allows the differential diagnosis between the various myopathies, which is fundamental to an appropriate treatment.

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SAT0628 INCREASE OF CORTICAL MICRO-CHANNELS (COMICS) AS A NEW FEATURE OF STRUCTURAL DAMAGE IN PAIENTS WITH RHEUMATOID ARTHRITIS

D. Werner[1,2], D. Simon[1], M. Englbrecht[1], F. Stemmler[1], A. Berlin[1], J. Haschka[3], N. Renner[4], T. Buder[5], J. Rech[1], K. Engelke[6], A.J. Hueber[1], G. Schett[1], A. Kleyer[1]. *[1]Department of Internal Medicine 3 – Rheumatology and Immunology, Universitätsklinikum Erlangen, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Erlangen; [2]Rheumatologie & Nephrologie, Städtisches Klinikum Dresden, Dresden, Germany; [3]St.Vincent Hospital, Medical Department, Academic Teaching Hospital of Medical University of Vienna, Vienna, Austria; [4]Department of Trauma and Orthopedic Surgery, Friedrich-Alexander-Unviersity Erlangen-Nuremberg; [5]Institute of Anatomy, Friedrich-Alexander-University Erlangen-Nürnberg (FAU); [6]Institute of Medical Physics, Friedrich-Alexander-University Erlangen-Nuremberg Erlangen, Erlangen, Germany*

Background: Bone damage in rheumatoid arthritis (RA) typically emerges at certain anatomical hotspots corresponding to the so-called "bare area", an intra-articular region between the cartilage and the insertion site of the joint capsule (1,2). We hypothesized that this region exhibits certain micro-anatomical properties, which facilitates the emergence of bone erosions.