diameters of IMB, MN and SMB. Logistic regression models determined their association with RA, and test characteristics for RA were calculated. Lesion-sizes were plotted.

Results: 634 participants underwent MRI: 157 consecutive patients with RA (109 women; age 59 ± 11 SD), 284 with other early arthritides (158 women; age 56 ± 17 SD), and 193 healthy controls (136 women; age 50 ± 16 SD). Univariable, IMB, MN and SMB were more prevalent in RA (all $P < 0.001$), DSMA was not ($P = 0.16$). Multivariable, MB, SMB and MN were all associated with RA independent of each other ($P < 0.016$). IMB was most frequent (sensitivity 69%), followed by SBM and MN (25% and 19%), specificity was high (70%, 96%, 94% respectively compared to other arthritides and 84%, 99% and 97% compared to healthy controls).

Although IMB, MN and SNB were more frequent in RA, the lesion-size was mainly similar in all groups. For MN a dorsoplantar diameter > 6 mm or transverse diameter > 5 mm was highly specific (specificity 100% compared to healthy controls), however it was infrequent (sensitivity 12% and 13%, respectively). For IMB and SMB no cut-off size could be distinguished with high specificity.

Conclusion: Intermetatarsal bursitis, Morton's neuroma and submetatarsal bursitis are increased prevalent in early RA and could be considered as disease features.

Disclosure of Interests: None declared

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SAT0560 THE PROGNOSTIC VALUE OF ULTRASONOGRAPHIC FINDINGS IN INDIVIDUALS WITH ASYMPTOMATIC HYPERURICEMIA

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Background: Chronic and steady asymptomatic hyperuricemia (AHU) can eventually lead to the deposition of monosodium urate crystals in joints and soft tissues. The rate of progression from AHU to clinically evident gout varies and mainly depends on serum uric acid levels. However, little is known about the prognostic value of ultrasonographic findings in individuals with AHU in detail.

Objectives: To explore the prognostic value of ultrasonographic findings in individuals with asymptomatic hyperuricemia.

Methods: We analyzed the ultrasonographic findings (snowstorm sign, double-contour (DC) sign, tophi, bone erosion, and abnormal blood flow) of bilateral knees, ankles and the first metatarsal-phalangeal joints (1st MTP) of individuals with AHU at Peking University People's hospital between June 2014 and May 2016. All individuals were followed up for two years.

Results: Among 218 individuals with AHU, the prevalence of snowstorm sign, DC sign, tophi, bone erosion and abnormal blood flow was 41%, 23%, 4%, 9% and 13%, respectively. Gout attacked in 36 patients during 2-year follow-up with 4.5 years of HU duration. The first attack affected the 1st MTP in 60%, the ankle in 31%, and the knee in 11% of the patients with gout. Patients with gout attack has longer hyperuricemia duration compared with individuals with AHU without gout attack. DC sign, tophi, and bone erosion on ultrasound were more frequently presented in patients with gout attack compared with individuals with AHU without gout attack. However, the prevalence of snowstorm sign and abnormal blood flow on ultrasound has no significant differences between patients with gout attack and individuals with AHU without gout attack.

Conclusion: Longer hyperuricemia duration, DC sign, tophi, and bone erosion on ultrasound in individuals with AHU could be associated with gout attack.

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SAT0561 METATARSOPHALANGEAL JOINT MEDIAL COLLATERAL LIGAMENT MEASUREMENT, A NOVEL ULTRASOUND FEATURE OF MONOSODIUM URATE DEPOSITION IN THE JOINT.

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Background: Acute gouty arthritis most commonly initially affects the first metatarsophalangeal joint (MT1). (1) Musculoskeletal ultrasound (US) is a reliable tool for detecting monosodium urate crystal (MSU) deposition in gout and hyperuricemia with validated, ultrasound features of double contour (DC) sign, tophus, and erosions. (2, 3) The collateral ligaments of MT1, which originate on the medial and lateral epicondyles of the metatarsals and extend to the proximal phalanx, function to stabilize the joint. (4) While tophus deposition typically occurs between the medial collateral ligament (MCL) and head of MT1, small MSU aggregates may be indistinguishable from surrounding tissue. In this study using US, we propose that an increased vertical depth between the superficial surface of the MCL to cortical surface of MT1 (dMC-MT) is indicative of MSU deposition (see figure 1). The aim was to evaluate associations of dMC-MT with serum uric-acid level (sUA) in a cohort of individuals with hyperuricaemia and non-episodic foot pain. We propose a novel sonographic feature of MSU crystal deposition in the MT joint.

Objectives:

- 1.) To evaluate the association between sUA and dMC-MT
- 2.) To record the presence/absence of classical features of MSU deposition including; double contour sign, erosions and tophi in a cohort of patients with hyperuricaemia and foot pain.
- 3.) To evaluate the associations between sUA and dMC-MT in those with/without classical features of MSU deposition (DC, erosion, tophi).

Methods: Following informed consent, hyperuricaemic patients (n = 52) underwent bilateral US of the 1MT using LogiqE9 at 15 MHz. Features of MSU deposition including DC sign, tophus and juxta-articular erosion were recorded. The dMC-MT was measured as the mean of the perpendicular distance between the superficial surface of the midpoint of the MCL to the MT1 head. Statistical analysis was performed using SPSS V.25 software. Data presented as MEAN $\pm$ S.E unless otherwise indicated.

Results: DC sign, tophus and erosion occurred in 31%, 20.7% and 19% of cases, respectively. Mean sUA was higher in tophus positive (540 ± 36) versus non tophus (470 ± 16) ($p < 0.01$) and erosion positive (522 ± 32) versus non erosion (477 ± 17) patients. dMC-MT was significantly greater in tophus positive patients ($0.34 \text{ cm} \pm 0.17 \text{ cm}$) versus non tophus ($0.27 \text{ cm} \pm 0.01 \text{ cm}$) ($p < 0.01$). dMC-MT was significantly greater in erosion positive patients ($0.31 \text{ cm} \pm 0.18 \text{ cm}$) versus non erosion ($0.28 \text{ cm} \pm 0.01 \text{ cm}$) ($p < 0.05$). In DC negative patients dMC-MT was significantly correlated with increasing sUA ($r = 0.34$ $p = < 0.05$). No correction between dMC-MT and sUA was seen in DC positive patients.

Conclusion: dMC-MT is significantly greater both in patients with tophus and erosions indicating its role as an additional marker of MSU crystal deposition. Furthermore a significant association between dMC-MT and sUA in DC negative patients suggests that dMC-MT may be a more sensitive indicator of early urate deposition in a subset of patients where the earliest site of urate deposition has not occurred directly on to articular hyaline cartilage. dMC-MT may therefore be a sensitive tool for very early urate deposition. Further studies clarifying a role for dMC-MT are now required.

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Figure 1. Medial Longitudinal Ultrasound of 1st MTP Joint in Patients with Hyperuricaemia. (A) Normal dMC-MT (0.22cm – block arrows.) (B) Large dMC-MT & tophus (0.33cm – block arrows.) Greyscale images obtained using Logiq E9 at 15mHz.

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SAT0562

ADDITIONAL BENEFIT OF ULTRASOUND TO THE EARLY DIAGNOSIS OF PSORIATIC ARTHRITIS

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Background: Being an inflammatory disease of joint, spine or enthesitis is the premise of the CASPAR diagnostic criteria for psoriatic arthritis (PsA). Traditionally, the assessment of local inflammation in joint, enthesitis and tendon relies on physical examinations. But multiple studies have demonstrated that ultrasound (US) is capable of detecting subclinical inflammation as well as non-inflammatory lesions.

Objectives: To compare the capabilities of physical examination and US findings in the diagnosis of early PsA, and further identify the US features which are most valuable for the diagnosis of PsA.

Methods: 66 patients with suspected PsA or early PsA (disease duration < 2 years) due to psoriasis with joint pain or seronegative inflammatory arthritis were enrolled and further assessed by both physical examination and ultrasound (US). Tender and swollen joint counts based on 68/66 joints, tender tendons, enthesitis (14 entheses) and dactylitis (20 digits) count were collected by physical examination. Abnormalities of peripheral joints, entheses and tendons were also evaluated by US. New bone formation was evaluated by hand X-ray. The diagnostic capacity of CASPAR criteria based on US and based on physical examination were compared. The diagnosis value of US features as well as clinical characteristics were analyzed. The clinical diagnosis of PsA by the expert panel was taken as the standard.

Results: CASPAR criteria based on US showed a higher specificity than those based on physical examination (96.7% vs. 53.3%) with a bit decrease of sensitivity (91.7% vs. 97.2%). 36 patients were eventually diagnosed as PsA and 30 patients were non-PsA. Gender distribution, mean age and disease duration were equally distributed in two groups of patients. Dermatology Life Quality Index (DLQI) was higher in PsA patients than non-PsA patients. Significantly more patients had nail change and new bone formation on hand X-ray in PsA patients than in non-PsA patients (69.4% vs. 26.7%, $P=0.001$ and 66.7% vs. 13.3%, $P<0.001$ respectively). Significantly higher frequencies of synovitis/synovium hypertrophy, tenosynovitis and enthesitis were found in PsA patients than non-PsA patients (58.3% vs 20.0%, $P=0.002$, 38.9% vs 3.3%, $P=0.001$ and 52.8% vs 13.3%, $P=0.002$, respectively). Logistic regression analysis showed that nail change (OR=25.1, $P=0.007$), new bone formation on X-ray (OR=33.1, $P=0.003$), tenosynovitis on US (OR=149.1, $P=0.003$) and enthesitis on US (OR=39.2, $P=0.008$) were independent risk factors for predicting the diagnosis of PsA.

Conclusion: US increased the specificity of CASPAR criteria compared with physical examination. Combined nail change, new bone formation on X-ray, tenosynovitis and enthesitis on US improved the diagnosis of early PsA.

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SAT0563

SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY-COMPUTED TOMOGRAPHY IS EQUIVALENT TO MAGNETIC RESONANCE IMAGING IN THE EARLY DIAGNOSIS OF SPONDYLOARTHRITIS: A RETROSPECTIVE STUDY

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Background: SpA has historically been a difficult clinical diagnosis, especially early diagnosis. Two imaging techniques that address this problem are magnetic resonance imaging (MRI) and Single-Photon Emission Computed Tomography-Computed Tomography (SPECT-CT). Their accuracies have not been adequately compared.

Objectives: The purpose of this study is to compare the sensitivities and specificities of SPECT-CT and MRI in SpA.

Methods: This retrospective study assessed all patients who underwent SPECT-CT of the sacroiliac joint to assess for SpA. The results of SPECT-CT were compared against MRI for all patients in the cohort who underwent an MRI within 4 weeks of the SPECT-CT. A diagnosis of SpA in the discharge summary was considered the reference standard, and was based on a combination of clinical scenario, response to therapy, imaging, patient history or lab index.

Results: 200 patients (173 men; average 22±4 years of age) were included. SpA was diagnosed in 189 (AS patients=99 and excluded in 11. SPECT-CT and MRI had similar ($P>0.05$; $k=0.74$) sensitivities (0.94 vs 0.94), specificities (1.00 vs 1.00), positive predictive values (1.00 vs 1.00), negative predictive values (0.94 vs 0.80), and accuracies (0.97 vs 0.95) when compared to the reference standard.

Conclusion: Although MRI remains the initial modality of choice in early diagnosing SpA, SPECT-CT appears diagnostically equivalent and should be considered a viable supplementary or alternative imaging modality particularly if there is contra-indication or inaccessibility to MRI.

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