Methods: Fifteen patients with HCVrA & 15 RA patients were subjected to: full history, clinical examination, Ultrasonography assessment using a Philips HDI 5000 system with 12–5 MHz Broadband Linear Transducer. Both knees were examined by one ultrasonographer who was blind to clinical data.

Results: In HCVrA, synovial hypertrophy was detected in 10% of knees (3/30) of which 66% (2 knees) exhibited Doppler signals, while in RA it was detected in 70% (21/30) of which 95% (20 knees) exhibited Doppler signals. Significant difference was found between the two groups ($p < 0.01$). Knee effusion was detected in 80% (24/30), & 86% (26/30), of patients with HCVrA & RA respectively, no significant difference was found. Cartilage degeneration was detected in 76% (23/30) & 83% (25/30), of patients with HCVrA & RA respectively. Bone erosions were detected in 20% (6/30) in the RA group. It was not detected in HCVrA patients. In HCVrA, there was no correlation between the presence of synovial hypertrophy with respect to cartilage degeneration and knee effusion.

Conclusions: We found no specific ultrasonographic feature specific for HCV related knee arthritis, the knee effusion is a predominant feature and the hypertrophied synovium is not frequently found. No destructive lesions were found to be related to the disease itself; however this should be confirmed by histopathological assessment.

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AB1052 QUALITATIVE SYSTEMATIC REVIEW: LACK OF CONSENSUS ON THE CLASSIFICATION CRITERIA FOR DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS

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Background: Diffuse idiopathic skeletal hyperostosis (DISH) is a condition characterized by flowing ossifications of the spine with or without ossifications of entheses elsewhere in the body.^{1,2} Studies on prevalence and pathogenesis of DISH use a variety of partially overlapping combinations of classification criteria, making meaningful comparisons across the literature difficult.^{3,4}

Objectives: The aim of this study was to systematically summarize the criteria available to classify or diagnose DISH to aid in the development of a more uniform set of diagnostic and/or classification criteria.

Methods: A search was performed in Pubmed, Embase, Cochrane Library and Web of Science using the term DISH and its synonyms. Articles were included when two independent observers agreed that the articles proposed a new set of classification criteria for DISH. All retrieved articles were evaluated for methodological quality and the presented criteria were extracted. The criteria were placed into one of three groups being “descriptive studies”, “sets of criteria for dichotomous diagnosis” or “sets of criteria with consecutive phases”.

Results: A total of 24 articles met the inclusion criteria. Two articles were descriptive studies, 11 contained dichotomous classification criteria and 11 described a set of criteria with consecutive phases. In all articles spinal hyperostosis was required for the diagnosis of DISH. Peripheral, extraspinal manifestations were included as a (co-)requirement for the diagnosis DISH in five articles. Most discrepancies revolved around the threshold for the number of vertebral bodies affected and to defining different developmental phases of DISH. More than half of the retrieved articles described a dichotomous set of criteria and did not consider the progressive character of DISH.

Conclusions: In our systematic review we summarize the available different classification criteria for DISH and highlight the lack of consensus on the diagnosis of (early) DISH. Consensus criteria, including consecutive phases of new bone formation that characterize DISH can be developed based upon established diagnostic and/or classification criteria.

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AB1053 A NOVEL METHOD FOR IDENTIFYING RADIOGRAPHIC BASELINE RISK OF OSTEOARTHRITIS USING AN ANISOTROPY-BASED TEXTURE ANALYSIS ALGORITHM: DATA FROM THE OSTEOARTHRITIS INITIATIVE

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Background: Osteoarthritis (OA) is the most common form of arthritis and affects disproportionately the knee. Recent developments in imaging techniques showed that OA is not just a joint disease but also involves progressive changes in the subchondral/subarticular bone area of the tibia. On top of the accepted method of measuring the joint space width, assessments of the trabecular bone structure in selected regions of interest (ROI) in conventional X-rays may be offering an alternative method for quantifying the risk and progression of this disease.

Objectives: The accepted method for assessing OA - Joint space width (JSW) and Joint Space Area (JSA) measurements - have limited capabilities in regard to early identification and reproducible follow-ups of the disease. The objective of this abstract is to evaluate the trabecular bone structure as an area for early identification of OA risk, applying texture anisotropy algorithms and subsequently comparing the results to standard JSW and JSA measurements.

Methods: This study was performed using data from the Osteoarthritis Initiative. The image data set was restricted to female, Caucasian, right knee exams recorded with the same modality. Furthermore we selected exams which had a KL grade of 0 at the baseline exam and a deteriorating KL grade ≥ 2 at the 96 month follow up. 22 cases fulfilled these criteria and we selected 22 matching controls with no signs of OA at the 96 month follow up. The selected region of interest (ROI) for the analysis of the radiographic texture consisted of four ROIs in the subchondral tibia and one additional ROI in each femur condyle – in total 6 ROIs. For each individual ROI, the degree of texture anisotropy was calculated and compared between case/control. In addition, JSW & JSA were calculated in both groups using a proprietary software-based method (ImageBiopsy Lab, Vienna, Austria).

Results: Whereas the JSW and the JSA measurements did not yield any significant differences with respect to their mean values (Cohen's $d = 0.139$ and 0.028), the calculated texture parameters showed that differences in values between cases and controls can be found in two of the subchondral ROIs (ROI1&2) with Cohens'd values of 0.625 and 0.831 , respectively. With respect to selected patient, the differences in anisotropy results were significant using these texture parameters.

Conclusions: Our results indicate that using the selected radiographic texture parameters, an early identification of patients at risk for developing OA using conventional X-rays can be achieved. This may offer an additional method for quantifying the risk of baseline OA. This is supported by the Cohen's d values that are by definition relatively large (0.625 and 0.831). Ongoing research focuses on larger sample set validation and the use of such algorithms for additional applications, such as the early identification of fracture risk.

Disclosure of Interest: None declared

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AB1054 QUANTITATIVE ULTRASOUND FOR ASSESSMENT OF DISEASE ACTIVITY IN PATIENTS WITH RHEUMATOID ARTHRITIS: RELIABILITY AND CONSTRUCT VALIDITY

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Background: Joint ultrasound is an integral part of assessment of patients with rheumatoid arthritis (RA). Semi-quantitative grading of ultrasound is subjective whereas quantitative ultrasound (QUS) may be more objective.

Objectives: To evaluate the reliability and construct validity of QUS of wrist joints in patients with RA.

Methods: We studied 95 patients with RA. Following parameters were studied: swollen and tender joint counts (SJC and TJC), patient and evaluator global assessment (PGA, EGA) and disease activity score (DAS28). Patients were classified as active disease and disease in remission as per expert clinician opinion. Colour Doppler ultrasound (CDUS) of wrists was done to obtain semiquantitative grading. Scans were processed in image analysis software (Photoshop CS4) to obtain the following: colour fraction of intrasynovial (IS) vascular signals (CF(IS) = pixel area of IS vascular signals/pixel area of entire IS area (area(IS))), CF(total) (pixel area of both IS and extrasynovial vascular signals/area (IS)) and number of IS (N(IS)) and extrasynovial (N(ES)) vascular signals. Images were stored and independently rated for both CDUS and QUS by two different raters blinded to each other's rating.

Results: Demographics of patients were: mean age 48 ± 16.7 years, mean disease duration 24 months (range 4–600), mean DAS28 of 2.98 ± 1.18 and 40% (38/95)

had active disease. CDUS findings were: synovial proliferation: grade 1: 27.4%, grade 2: 54.7%, grade 3: 11.6%; vascularity: grade 1: 41.1%, grade 2: 32.6% and grade 3: 9.5%. Summary findings of QUS were: CF(IS): 8.6±10.63 (median 4.4), CF(total): 9.9±11 (median 5.2), median N(IS): 3 (0–26) and mean N(ES): 1.2 (0–19). Cohen's kappa for synovial proliferation was 0.402 (p<0.001) and vascularity was 0.605 (p<0.001). Intraclass correlation (ICC(1,2)) for CF(IS) was 0.996 (95% confidence interval (CI): 0.994–0.997) and ICC(1,2) for CF(total) was 0.995 (95% CI: 0.993–0.997). CF(IS) was correlated with SJC (r=0.22, p=0.029), TJC (r=0.39, p<0.001), PGA (r=0.5, p<0.001), EGA (r=0.583, p<0.001) and DAS28 (r=0.47, p<0.001); correlations for CF (total) were: SJC (r=0.25, p=0.013), TJC (r=0.41, p<0.001), PGA (r=0.525, p<0.001), EGA (r=0.515, p<0.001) and DAS28 (r=0.5, p<0.001). Significant correlations were also observed for N(IS) with SJC (r=0.282, p=0.006), TJC (r=0.411, p<0.001), PGA (r=0.48, p<0.001), EGA (r=0.514, p<0.001) and DAS28 (r=0.467, p<0.001). Spearman rank correlations of CDUS vascularity were: SJC (r=0.26, p=0.01), TJC (r=0.292, p=0.004), PGA (r=0.26, p=0.012), EGA (r=0.168, p=0.103) and DAS28 (r=0.275, p=0.007). Spearman rank correlations of CF(IS), CF(total) and N(IS) with CDUS vascularity were 0.828, 0.864 and 0.689 respectively (p<0.001). Cut-off values for CF(IS), CF(total) and N(IS) for distinguishing active RA from RA in remission were 4.78 (AUC: 0.82, 95% CI: 0.73–0.9), 5.75 (AUC: 0.89, 95% CI: 0.69–0.88) and 2.5 (AUC: 0.77, 95% CI: 0.68–0.86) respectively. There were 40 patients with CDUS vascularity ≥2 among which 62.5% (25/40) had active disease. In this group only CF(total) >5.75 could distinguish between patients with active disease from disease in remission (100% (25/25) vs., 80% (12/25), p=0.046). **Conclusions:** CF(IS) and CF(total) had excellent inter-rater reliability and construct validity. Simple quantitative cutoff values could distinguish between active RA from remission. **Disclosure of Interest:** None declared **DOI:** 10.1136/annrheumdis-2017-eular.6482

AB1055 LEUKOCYTE ESTERASE REAGENT STRIPS FOR RAPID DIAGNOSIS OF INFLAMMATORY SYNOVIAL FLUID

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Background: The analysis of synovial fluid is an important tool for diagnosing joint disease. When synovial fluid is removed, the white cell count (WCC) decreases with time, and an inflammatory liquid could become a false non-inflammatory specimen. Reagent strip testing of urine is a valid tool for the diagnosis of urinary tract infection, via the detection of leukocyte esterase activity. It has been used for the analysis of others body fluids. Synovial fluid test at the site of arthrocentesis using reagent strips could have potential benefits as a screening tool.

Objectives: To evaluate the performance of leukocyte esterase reagent strips for diagnosis of inflammatory synovial fluid.

Methods: Prospective single center study. We analyzed synovial fluids samples collected from patients in a tertiary university Hospital (November 2015- December 2016). Synovial fluid samples were tested within 1 hour after collection. We analyzed: The presence of leukocyte esterase using the leukocyte esterase reagent strips test (originally designed for urine test, URI-Clip Test, Menarini Diagnostics). It was recorded semi quantitatively: negative, 1+ (>25 WBC/uL), 2+ (>75 WBC/uL) or 3+ (>500 WBC/uL) by comparison with a standard color chart found on the container's label. The WCC, formula, glucose level. The WCC was measured by manual leukocyte counting, using saline as diluents. Cultures were also collected. We consider + if leukocyte esterase pad was more or equal than 1+ positive. The cut-off for the WCC (>2000cells/mm³) was used to differentiate between inflammatory and non-inflammatory specimens. We compared the WCC (reference standard diagnostic test) with the presence of leukocyte esterase using the leukocyte esterase reagent. Sensitivity (Se), specificity (Sp), PPV, NPV were determined. P-value smaller than 0.05 were considered significant.

Results: During the study period, 125 joint fluid specimens were analyzed: 56 (44.8%) mechanical and 69 (55.2%) inflammatory. Of the mechanical fluids 33 (58.9%) were negative by leukocyte esterase reagent and of the inflammatory fluids 67 (97.1%) were positive. The Se and Sp of leukocyte esterase reagent was 97.1% and 58.9% respectively. The PPV was 74.4% and NPV was 94.3%. The 2 false-negative results (negative by leukocyte esterase reagent but more than 2000 WBC/mm³), showed a predominance of mononuclears (> =91%), the median WCC was 2 775/mm and median neutrophil percentage was 8.5%. For inflammatory fluids: semi-quantitative results (negative, 1+, 2+ and 3+) were significantly different regarding the main leukocyte, neutrophil and lymphocyte count (table).

	Negative	1+	2+	3+	p value
Total cell (cel/mm ³)	3025	18272.9	10553.5	56494.2	<0.0001
Leukocyte (cel/mm ³)	2775	12907.1	8528.8	30870.2	<0.0001
Lymphocyte (%)	91.5	50.4	21.61	6.4	<0.0001
Neutrophil (%)	8.5	49.6	83.7	91.7	<0.0001

Conclusions: Our results demonstrate that leukocyte esterase reagent strips are a rapid, cheap, and sensitive tool to identify inflammatory synovial fluid. Leukocyte

esterase reagent strips had an excellent Se but a poor Sp, it could be used as a screening tool in primary care practice. A positive result may indicate an inflammatory process, then the patient should be referred to a rheumatologist.

Disclosure of Interest: None declared **DOI:** 10.1136/annrheumdis-2017-eular.2657

AB1056 RADIOGRAPHIC ANALYSIS OF METATARSUS PRIMUS ELEVATUS IN PATIENTS WITH RHEUMATOID FOREFOOT DEFORMITIES

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Background: Metatarsus primus elevatus involves dorsal elevation of the first metatarsal relative to the lesser metatarsals. The role of metatarsus primus elevatus in rheumatoid forefoot deformity is yet to be elucidated. We hypothesize that metatarsus primus elevatus can be attributed to a different pathomechanism than typical rheumatoid forefoot deformities such as hallux valgus, splay foot, and flat foot.

Objectives: To clarify the radiographic characteristics of metatarsus primus elevatus in patients with rheumatoid forefoot deformities.

Methods: We retrospectively reviewed standing anteroposterior and lateral radiographs of 51 feet (37 patients; mean age 65.7±7.1 years) before toeplasty due to metatarsalgia at our hospital. The elevation of the first metatarsal relative to the second metatarsal (MPE), the hallux valgus angle (HVA), the intermetatarsal angle (IMA), talar pitch, and calcaneal pitch were measured. For statistical analyses, the Mann-Whitney U test was used.

Results: Median MPE was 1.7 mm (interquartile range: 0.7–4.5 mm). We compared the group with MPE >5 mm (N=12 feet) to the group with MPE ≤5 mm (N=39 feet). The group with higher MPE was significantly younger (p=0.011). There was no significant difference in HVA between the two groups (p=0.068), although IMA was significantly smaller in the group with higher MPE (p=0.033). In the group with higher MPE, calcaneal pitch was greater (p<0.001) and talar pitch was smaller (p=0.016).

Conclusions: In patients with metatarsus primus elevatus, other rheumatoid forefoot deformities such as spray foot and flat foot were not observed. There was a wide range of hallux valgus severity. Metatarsus primus elevatus may be attributed to greater hindfoot calcaneal pitch.

Disclosure of Interest: None declared **DOI:** 10.1136/annrheumdis-2017-eular.1945

AB1057 MULTIDISCIPLINARY APPROACH FOR DIAGNOSING CONNECTIVE TISSUE DISEASE-RELATED LUNG DISEASE: IS IT USEFUL FOR RHEUMATOLOGISTS?

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Background: Many patients with idiopathic interstitial pneumonia (IP) have certain clinical, serological and/or pulmonary morphologic features suggesting an underlying autoimmune disease (AD), but without meeting established criteria for connective tissue disease (CTD), a situation labelled as "IP with autoimmune features" (IPAF)¹. To identify an underlying aetiology is important because it may impact on treatment and prognosis, and could be optimised by multidisciplinary approach.

Objectives: 1. To identify prevalence of IPAF in routine practice. 2. To determine the value of lung biopsy to diagnose underlying AD. 3. To describe the course of IPAF.

Methods: Observational, longitudinal retrospective study in a tertiary hospital specific outpatient clinic for IP patients with cough and dyspnea as dominant symptoms requiring co-evaluation by rheumatologists in 2010–2016. Variables included: clinical, serologic and morphological findings by High-Resolution Computed Tomography of lungs assessed by 2011 current guidelines² and open lung biopsy. Statistical analysis: SPSS 17.0.

Results: Of 410 patients evaluated for IP, 93 had rheumatologist assessment, 70 F (75.3%), mean age at diagnosis 62.6 years (SD12.13), of whose 48 had no previous diagnosis. Mean follow-up 3.54 (SD2.77) years in undiagnosed patients. The most frequent radiological patterns were: inconsistent with usual interstitial pneumonia (UIP) (67.7%), UIP (22.6%), Possible UIP (4.3%), others (4.3%). Lung biopsy was performed in 15 patients (16%), 11 without previous diagnosis. Histopathology patterns: 8 non-specific interstitial pneumonia (NSIP) in whom final rheumatologic clinical diagnosis was IPAF in 6 and UCTD in 2; 1 UIP (Sjögren); 1 vasculitis (p-ANCA) and 1 lymphoid interstitial pneumonia (LIP) corresponding to IPAF. We found lymphoid aggregates in one patient diagnosed as a IPAF. Overall new diagnostics were: IPAF 43.8%, UCTD 4.2%, CTD 52.1%. 14/93 (15%) patients died, of whom 6 had IPAF (43%).

Conclusions: 1. Of patients with IP referred for rheumatologist assessment, 31% has no established CTD, with IPAF as clinical diagnosis in 24.7% of overall patients. 2. Surgical lung biopsy allowed to diagnose AD in 23% of unlabelled