53 patients were included in control group (Group 2). The Lequesne Index was used to determine the severity of the disease.

Results All patients in group 1 and 31 patients in group 2 had knee pain and the mean duration of pain was 51.6+77.5 months in group 1 and 23.4+46.5 months in group 2. The mean Body Mass Index (BMI) was 31.7+5.0 in group 1 and 36.7+4.0 in group 2. According to the results of scintigraphic evaluation, healthy controls were separated into two groups. In group 2A patients who had an increase in uptake at least one joint and in group 2B patients who had no uptake. The mean MSS was 4.2 +1.4 in group 1 and 3.3+1.6 in group 2A. Also the mean MRS of the patients in group 1 were 2.9+0.9 and 0.6+0.5, 0.2+0.4 in group 2A and 2B respectively. The mean score of the Lequesne Index was 8,9+3,6 in group 1 patients. There was a positive correlation between age and MSS ($p < 0,05$) and BMI and MRS ($p < 0,05$). Also there was a strong correlation between Lequesne OA Severity Index Score the age of the patients in group 1 but no correlation with the MSS. According to the clinical and/or radiological criteria sensitivity of bone scintigraphy was 98.2%, specificity was 57.1%, positive predictive value was 76% and negative predictive value was 96%.

Conclusion Our results suggest that 99 m technetium scintigraphy is a better quantifying method in assessing the changes of OA especially in early cases.

SAT0209 MRI EVALUATION OF CHONDRAL LESIONS IN KNEE OSTEOARTHRITIS: ARTHROSCOPIC CORRELATION

¹C Acebes, ²A Robledo, ³J Granizo, ¹G Herrero-Beaumont. ¹Rheumatology; ²Radiology; ³Epidemiology, Fundación Jiménez Díaz, Madrid, Spain

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Background Arthroscopic exam evaluation (chondroscopy) of the articular cartilage is considered a relevant instrument of OA outcome for research purposes. Nevertheless availability of other accurate but non-invasive methods for chondral evaluation in OA, such as MRI, should be desirable.

Objectives To evaluate the capacity of MRI to score chondropathy in knee OA compared with chondroscopy.

Methods 24 consecutive patients diagnosed of knee OA were referred for knee hyaline cartilage MR imaging of medial chondile and tibial plateau with a fat-suppressed spoiled gradient-echo sequences (SPGR) before chondroscopy. MRI and chondroscopic cartilage lesions evaluated by two methods were registered in an scale diagram and total score chondropathy was calculated using a software programme (Autocad). Correlation was determined by Sperman's test for both evaluation ($p < 0,05$).

Results High and significant intraobserver correlation was observed for evaluation of medial chondile and tibial plateau by chondroscopy $r = 0,806$ and $r = 0,721$ and by MRI $r = 0,805$ and $r = 0,680$ respectively. Correlation coefficient between chondroscopic and MRI score for chondile and tibia was $r = 0,781$ and $r = 0,531$ respectively.

Conclusion Fat-suppressed SPGR imaging seems to be a relevant tool for evaluation of cartilage lesions in OA of the knee showing a high correlation between both procedures. Both chondroscopy and MRI have a lower correlation for the detection of chondral lesions in tibial plateau than in femoral chondile.

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SAT0210 BRAIN MAGNETIC RESONANCE IMAGING (MRI) AND PROTON MAGNETIC RESONANCE SPECTROSCOPY (1H-MRS) IN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

¹M Govoni, ²P Colamussi, ¹N Rizzo, ¹D Santilli, ³R Ricci, ¹F Trotta. ¹Sez. Di Reumatologia; ²Ist. Di Medicina Nucleare, Università Di Ferrara, Ferrara; ³Sevizio Di Neuroradiologia, Ospedale Bellaria, Bologna, Italy

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Background

Objectives We evaluated the usefulness of 1H-MRS in patients with SLE, with or without neurological involvement, in whom single photon emission computed tomography (SPECT) showed cerebral perfusion abnormalities in brain areas with no detectable changes at MRI.

Methods 9 female SLE patients, with a mean age of 28.7 years (range 14–46) and a mean duration of disease of 2.5 years, underwent cerebral blood flow (CBF) study with 99mTc-SPECT and brain MRI with 1H-MRS analysis. 4 patients complained of headache, 1 patient was being treated for partial epilepsy and 4 patients were asymptomatic and with a negative neurological examination. In brain areas shown to be hypoperfused by SPECT, peak levels of signals from brain metabolites N-acetylaspartic acid (NAA), choline (CHO), and creatine (CRE) were measured on a total of 20 brain voxels (volume = 8 cm³) selected on transverse MR images. Values were expressed as NAA/CHO, CHO/CRE and NAA/CRE ratios. Ratios measured in 9 hypoperfused brain areas were compared with those obtained in 11 normoperfused areas. MRI showed a normal appearance in all of the above brain areas. Statistical analysis was performed by means of classical t-test.

Results NAA/CHO ratio was decreased in 78% of hypoperfused and in 18% of normoperfused brain areas (1.70 ± 0.15 vs 2.55 ± 0.16 ; $p = 0.0017$). CHO/CRE ratio was increased in 89% of hypoperfused and in 9% of normoperfused brain areas (1.34 ± 0.08 vs 0.80 ± 0.05 ; $p < 0.0001$). No significant differences were detected in NAA/CRE ratios. The comparison of spectroscopic ratios measured both in hypoperfused and normoperfused areas in patients with neurological symptoms with those obtained in asymptomatic patients did not show any significant differences.

Conclusion In SLE patients, independently from the presence of overt clinical neurological involvement, 1H-MRS is a valuable tool to detect neuronal biochemical changes in brain regions with reduced CBF at SPECT. Although the precise meaning of these abnormalities remains to be determined, their localization in areas with reduced CBF suggests that they could represent an early sign of neuronal injury in SLE patients even in the presence of a normal brain MRI appearance. If proven so, 1H-MRS could be considered a sensitive and accurate measure of neuronal dysfunction in SLE and this would demonstrate that the detection of reduced CBF by SPECT in areas with a normal MRI appearance is not to be regarded as a false positive result.

SAT0211 INTEROBSERVER AGREEMENT OF ULTRASOUND EXAMINATION IN ASSESSMENT OF THE SMALL JOINTS OF THE HANDS AND FEET IN RHEUMATOID ARTHRITIS

¹M Szkudlarek, ²M Court-Payen, ¹S Jacobsen, ³H Thomsen, ⁴M Ostergaard. ¹Department of Rheumatology; ²Department of Ultrasound; ³Department of Radiology, Herlev Hospital, Copenhagen, Denmark; ⁴The Danish Research Center of Magnetic Resonance, Hvidovre Hospital, Hvidovre

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Background Ultrasound examination (US) of the small joints of the hands and feet in rheumatoid arthritis (RA) has the potential to become a rheumatological bedside procedure to assess early joint pathology. There is a growing number of studies and possible practical applications of US in this field. However, US has not been sufficiently validated with respect to common and early joint manifestations of RA.

Objectives To evaluate the interobserver agreement of ultrasound examination in assessment of finger and toe joints in rheumatoid arthritis.

Methods B-mode and power Doppler US was performed on 150 small joints of 30 patients with active RA (ACR 1987 criteria). Nineteen patients had a disease duration of 2 years or more and eleven patients had a disease duration of less than 2 years. Sixty-one of the joints were clinically active (tender and/or swollen), as evaluated by an experienced rheumatologist. US was performed with a LOGIQ GE 500 unit by means of a 7–13 MHz linear array transducer. In each patient, five preselected small joints were examined: 2nd and 3rd metacarpophalangeal joints, 2nd proximal interphalangeal joint, 1st and 2nd metatarsophalangeal joints. The number and location of bone erosions, synovial thickening, joint effusion and power Doppler signal in these joints were evaluated and classified on four-grade semi-quantitative scales. Both US examinations were performed independently on the same day by two observers – a radiologist with expertise in musculoskeletal US and a rheumatologist trained in US evaluation of small joints of the extremities. The observers reached consensus as to the evaluation scale prior to the beginning of the study.

Results In the examined joints, exact agreement between the two observers was seen in 84% of the examinations with regard to bone erosions, in 78% as to synovitis, in 84% as to joint effusions and in 82% as to power Doppler signal assessments. A difference of more than one grade on the evaluation was found in 6, 11, 1 and 3%, respectively. Corresponding unweighted kappa values were 0.69, 0.63, 0.63 and 0.51.

Conclusion The present study showed a good degree of interobserver agreement for the examined parameters. Our results suggest that ultrasound examination is a reproducible method for assessment of RA joint pathology of the finger and toe joints.

SAT0212 BONE AND JOINT SCAN AS COMPARED TO JOINT CLINICAL EVIDENCE

C Venditti, R Peluso, M Cimmino, R De Luca Bossa, G Loi, A Spanò, A Del Puente, P Oriente. *Rheumatology Unit, University of Naples "Federico II", Naples, Italy*

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Background Bone and joint scan using ^{99m}Tc -MDP is often used in rheumatologic practice, but there is little data on its effective relevance in evaluating chronic articular inflammatory diseases.

Objectives The aim of this work has been to compare bone scan results against clinical evidence of joint inflammatory involvement, evaluating with both approaches the number of affected joints (NAJ) in a group of patients with rheumatoid arthritis (RA) or osteoarthritis (OA).

Methods Bone scan was carried out in 75 consecutive patients (44 RA, 31 OA). The nuclear medicine specialist indicated in the report the list of joints showing uptake. In the same patients (without knowing the results of scintigraphy) a rheumatologist diagnosed the NAJ on the basis of clinical signs of inflammation.

Then the patients were stratified in 2×2 tables according to the prevalence of clinical evidence or scintigraphic uptake.

Results The distribution was found to be not significant (chi-square = 1.6, $p = 0.2$). The percentage of patients without uptake was only 5.3%. In 33 patients (44%) no clinical evidence was observed. Among these, 30 showed articular uptake (in an average of 7.0 ± 4.6 joints). Considering only the patients with clinical evidence, the subjects with articular uptake were 41 out of 42 (97.6%) with an average of 8.6 ± 4.6 involved joints. In these patients the ratio between number of joints with uptake and number of joints with clinical evidence (ratio uptake/clinical) was then calculated for each subject. Such a ratio resulted in an average of 2.9 ± 3.6 . These results were also confirmed analysing the data by sex, disease (RA or OA) and class of therapy. We then decided to assess if the greater prevalence of involved joints obtained with bone scan was correlated with an increase of inflammatory indexes. Taking into consideration the patients with clinical evidence, we performed multiple regression analysis using as dependent variable in distinct models the ratio uptake/clinical, the number of joints with clinical evidence and the number of joints showing uptake. The inflammatory indexes (ESR and CRP) were used as independent variables and age, sex, diagnosis and therapy were used as covariates. The uptake/clinical ratio did not show any significant correlation. The number of joints with clinical evidence correlates with ESR, those ones showing uptake correlates only with age, both with direct correlation.

Conclusion The data obtained indicates that the articular scintigraphic uptake in RA and OA, on average, highlights a significantly higher number of joints involved as compared to the clinical test. It still remains to be defined if this is an overestimation related to the characteristics of the scan or if it is the sign of a higher sensibility in highlighting the inflammation location. An element of caution against the second hypothesis is established by the absence of correlation with the inflammatory indexes.

SAT0213 DETERMINATION OF BONE EROSIONS IN PATIENTS WITH ARTHRITIS BY ULTRASONOGRAPHY, MRI AND CONVENTIONAL RADIOGRAPHY

¹L Terslev, ¹A Savnik, ²H Christensen, ¹E Qvistgaard, ³S Torp-Pedersen, ¹B Danneskiold-Samsøe, ¹H Bliddal. ¹Parker Institute; ²Department of Radiology, Frederiksberg Hospital; ³Department of Radiology, Gentofte Hospital, Copenhagen, Denmark

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Background Conventional radiography (CR) is the standard of reference for detection and quantification of destruction in arthritis. However several studies^{1,2} have shown that Magnetic Resonance Imaging (MRI) may be superior to CR in the detection of bone erosion while the use of ultrasonography (US) has not yet been fully clarified.

Objectives To compare CR with US and MRI in detecting bone erosions in patients with arthritis.

Methods 16 patients (9 women and 7 men, median age 50.5 years, range (31–69)) with arthritis were included and examined by CR in 2 planes with Nørgaard views, US with a 15 MHz linear transducer in longitudinal scans consecutively covering the whole joint and by 1.5 T MRI with T1-weighted images. Only wrist, 2nd and 3rd MCP joints were evaluated. A total of 106 bone surfaces in the hands were examined by US (45 joints) and 112 bone surfaces by MRI and CR (48 joints). Each imaging modality was evaluated independently. Erosions in CR were