Methods 16 patients with RA according to the 1987 ACR criteria, of whom 5 were in complete clinical remission, 6 patients with PsA, and 2 CO were studied. MRI was performed with a 0.2T dedicated device (Artoscan, Esaote, Genova, Italy). The sequence used was a Spin Echo (TR/TE = 100/16 ms, matrix = 160 × 128, FOV = 50 × 150, slice thickness = 5 mm). A bolus of 0.2 ml/kg of gadopentetate dimeglumine was injected intravenously and fast images of three slices of the wrist were repeated every 20 s thereafter. The enhancement ratio was calculated both as rate of early enhancement (REE) and as relative enhancement (RE). The signals from a small circular ROI in the region of maximal enhancement and from a larger segmented region including most of the enhanced synovial membrane were evaluated. The signal was normalised to the bone to reduced noise.

Results Both REE and RE were significantly higher in active RA vs. inactive RA ($p = 0.003$), PsA ($p = 0.002$), and CO ($p = 0.0002$). In addition, RE and REE were higher in inactive RA than in CO ($p = 0.008$). Results from the analyses using the small ROI and the segmented ROI showed a good correlation (mean $R = 0.75$). REE resulted slightly more sensitive than RE.

Conclusion Dynamic MRI is a useful method to evaluate synovitis by allowing quantitative estimation of the synovial enhancement. This promising technique is able to differentiate active from inactive RA, as well as RA from PsA and CO. The evaluation of a small area of the synovial membrane seems to be equally effective than the more time-consuming segmentation.

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SAT0207 DETERMINATION OF SYNOVIAL INFLAMMATION IN THE WRIST BY DOPPLER ULTRASONOGRAPHY AND MRI IN PATIENTS WITH ARTHRITIS

¹L Terslev, ²A Savnik, ¹E Qvistgaard, ³S Torp-Pedersen, ¹B Danneskiold-Samsøe, ⁴HS Thomsen, ¹H Bliddal. ¹Parker Institute; ²Department of Radiology, Frederiksberg Hospital; ³Department of Radiology, University Hospital at Gentofte; ⁴Department of Radiology, University Hospital at Herlev, Copenhagen, Denmark

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Background Synovial membrane volumes obtained by Magnetic Resonance Imaging (MRI) have been suggested as a marker of joint disease activity.¹ Graded power Doppler images has been able to detect treatment response in joint synovium.² If ultrasonographic (US) parameters correspond with findings in MRI an alternative method in assessing inflammatory activity would be available.

Objectives To compare the evaluation of signs of synovial activity in patients with arthritis as determined by MRI and DUS respectively.

Methods 11 patients (5 women and 6 men, median age 52,6 years, range (32–69)) with arthritis were included. All patients were examined by DUS with a 15 MHz linear transducer and by 1.5 T MRI before and after contrast injection. The area and thickness of the synovial membrane were outlined after contrast injection on MRI. US flow pattern of the synovium in the wrist was evaluated by quantitative spectral DUS ($n = 10$), recording resistance index (RI). The relative RI (rRI) = meanRI/extra synovial RI, was calculated to adjust for changes in peripheral resistance unrelated to the joint. The synovial vascularisation was determined by colour Doppler ($n = 10$). Using a colour recognition function, all marked pixels were changed to a reference

colour and the total amount of pixels finally depicted using a colour histogram.³

Each patient was evaluated by ESR, CRP and joint assessment.

Results The colour Doppler pixel (CDP) measurements correlated significantly with both max area and thickness of the synovial membrane on post contrast MR images ($R_s = 0.88$ and 0.84 , $P < 0.002$). Also the rRI values correlated significantly with both max area and thickness of the synovial membrane on post contrast MR images ($R_s = 0.89$ and 0.93 , $p < 0.001$). Kappa statistics were made on MRI and DUS: Kappa was 0,8 between the max area and thickness of the synovial membrane on post contrast MR images and the CDP measurements. Kappa was 1,0 between the max area and thickness of the synovial membrane on post contrast MR images and the rRI values. No correlation was found between ESR, CRP and joint assessment and the imaging modalities.

Conclusion The estimation of synovial inflammatory activity on DUS was comparable with post contrast MRI. DUS appears to be an alternative method to determine inflammatory activity in patients with rheumatic diseases.

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SAT0208 THE PREDICTIVE ROLE OF BONE SCINTIGRAPHY IN OSTEOARTHRITIS, RELATIONSHIP WITH AGE AND SEVERITY OF THE DISEASE

¹S Bal, ²H Erturk, ³M Aydin, ³O Ugur, ¹R Celiker. ¹Physical Medicine and Rehabilitation; ²Physical Medicine and Rehabilitation, State Hospital, Nevsehir, Turkey; ³Nuclear Medicine, Hacettepe University Medical School, Ankara

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Background Osteoarthritis (OA) is the most common cause of musculoskeletal diseases in the developed countries. The diagnosis of OA is usually dependent on clinical and radiological evaluations which have some limitations in measuring the outcome.

Objectives The aims of this study were to evaluate the predictive role of bone scintigraphy in OA, and to study the relationship with age and severity of the disease.

Methods Ninety-nine female subjects were included in this study. Conventional x-rays of the hand, knee, hip and lumbar regions were obtained from each subjects. According to Kellgren and Lawrence Grading System the radiological score of the joint which had the highest grade was accepted as the Maximum Radiological Score (MRS). A bone scan was performed for each subjects 4 h after the injection of 740 MBq of technetium ^{99m}-MDP. Spot images of hand, knee, lumbar vertebrae and pelvis were acquired using a gamma camera (Toshiba GCA 601). Besides the increased or normal uptake of activity at the affected joints, the ratios of lesion/non-lesion were also calculated. In the areas where the increased uptake of activity were present, the maximum lesion/non-lesion ratio was accepted as Maximum Scintigraphic Score (MSS). According to the American College of Rheumatology- clinical and radiological ? criteria for diagnosis of OA 46 patients were included in OA group (Group 1) and