Conclusion: Demographic and clinical factors differentiate axSpA from nr-ax-SpA patients. Diagnostic delay was higher in rad-axSpA compared with nr-ax-SpA despite the same treatment. Some lesions of spine/SI at CR and MRI, and psoriasis, were mostly associated with diagnostic delay and sex.

Disclosure of Interests: None declared

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AB1086

POWER DOPPLER AND SPECTRAL DOPPLER ULTRASOUND IN SUSPECTED ACTIVE SACROILIITIS: A COMPARISON WITH MAGNETIC RESONANCE IMAGING AS GOLD STANDARD

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Background: SIJ involvement is a characteristic feature of Spondylarthritis (SpA). Magnetic Resonance imaging (MRI) has been included in the new Assessment of SpA International Society (ASAS) criteria for the classification of Axial SpA. Gray scale US, Color Doppler ultrasound (CDUS), contrast-enhanced CDUS, and spectral Doppler (SD) US has been used in few works to evaluate the inflammatory activity of the SIJ with not conclusive results. Power Doppler ultrasound (PDUS) was not yet applied to the study of SIJ with active SI.

Objectives: The aim of this work was to study with PDUS and SD US the SIJ of patients with suspected active SI, to describe inflammatory flows with spectral wave analysis (SWA) in duplex Doppler US, and to correlate US data with clinical characteristics and the presence of bone marrow edema (BME) in MRI.

Methods: 22 patients (18 females and 4 males, mean age 35 years) with new onset of inflammatory back pain (IBP), were included. Every patient underwent an US examination in prone position. The sonographers were blinded to the clinical data of the patient. A Esaote Twice US machine, equipped with a convex multifrequency 1-8 MHz probe, was used, with standardized parameters: 1-5 MHz for gray scale, 1.9-2.3 MHz frequency for Doppler with Pulse Repetition Frequency (PRF) of 1.0 KHz and a color gain just under the artifact limit. SIJ was located as the hypoechoic triangle delimited between the sacrum and iliac bone, and the posterior SI ligament as the upper margin. The first sacral foramen was always localized to avoid measurement of the normal pre-sacral arteries. The PDUS was applied, and if any signals were detected in the SIJ, they were scored with a 3-points scale: 0= absence of signals, 1= isolate vessels, 2= more than one vessel. The signals were also classified as intra-articular or peri-articular. The same vessels were also evaluated using quantitative SD calculating the Resistive Index (RI=peak of systolic flow- end diastolic flow/peak systolic flow), ranging between 0 and 1. Every patient underwent MRI of SIJ within the same week, before treatment. A statistical analysis was performed, estimating the sensitivity and specificity against the gold standard (presence of BME in the same SIJ according to ASAS criteria). The Spearman rank non-parametric test was applied to correlate the presence and grading of BME with PDUS grading and RI. A regression analysis was applied between PDUS results and clinical characteristics.

Results: In 14/22 SIJ MRI revealed BME. In 13 of them, PDUS confirmed abnormal hypervascularisation in the intrarticular portion of SI, and in 3 in the peri-articular site too. Two SIJ showed hypervascularisation at PD with no BME in MRI. A significant correlation was demonstrated between positivity and grading of PD and presence of BME in MRI ($p=0.0005$). SD analysis demonstrated low Resistance Index (RI) values in 14 SIJ (mean 0.57). An inverse correlation was demonstrated between RI and grading of BME in MRI ($r=-0.6229$, $p=0.044$). The diagnostic accuracy of SD for detection of active SI varied on the basis of RI cut-off value. The best values of sensitivity (62.5%) and specificity (61.5%) were obtained with a RI cut-off values of 0.60. A multiple regression model demonstrated a significant relationship between PDUS signals and ASDAS ($p=0.0382$), but not with inflammatory reactants.

Conclusion: PDUS and SD US of SIJ can be useful as first imaging assessment in suspected active SI, demonstrating a good diagnostic accuracy compared with MRI. Intra-articular low RI values (<0.60) on SD indicate active SI with good accuracy. Moreover, PDUS signals into the SIJ correlate with clinical symptoms but not with inflammation reactants.

Figure 1. Doppler US in SI. Right SIJ with a Doppler signal along the posterior SIJ ligament, and another Doppler signal into the joint, where SD analysis gave a RI of 0.62.

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AB1087

DETECTING AXIAL AND PERIPHERAL NEW BONE FORMATION IN SPONDYLOARTHRITIS PATIENTS USING [18F]FLUORIDE PET-CT IMAGING

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Background: Bone formation in spondyloarthritis (SpA) is presumably related to local enthesitis/peri-articular inflammation and ultimately may lead to functional limitation (1,2). X-rays only allow long-term monitoring of bone formation (≥ 2 years) (3). Imaging techniques that can visualize bone formation at an early stage would therefore be valuable. Positron Emission Tomography (PET) using [¹⁸F]Fluoride can visualize and quantify (early changes in) bone formation at molecular level (4).

Objectives: To investigate the feasibility of [¹⁸F]Fluoride to assess new bone formation at axial and peripheral enthesial sites in SpA patients.

Methods: Thus far, 5 of the total of 15 patients with clinically active ankylosing spondylitis (AS) (according to modified New York criteria and BASDAI ≥ 4) and 8 of the 25 patients with active psoriatic arthritis (PsA) (according to CASPAR criteria and ≥ 1 clinically active enthesitis) were included. Of each patient, a whole body [¹⁸F]Fluoride PET-CT scan was performed. All scans were visually judged and scored dichotomously by one reader (blinded for clinical data) for PET-positive lesions in the spine, peripheral entheses sites and joints. Low dose CT was used for anatomical reference.

Results: The study is ongoing, with whole body [¹⁸F]Fluoride PET-CT scans available in five AS patients and eight PsA patients. In 4/5 AS scans, at least (≥ 1) PET positive lesions were found in the cervical, thoracic and/or lumbar vertebrae. These were mainly found in anterior corners of vertebrae and bridging syndesmophytes (Fig. 1A). In all eight PsA patients, at least 1 PET positive lesion was visualized, projected either at the site of a tendon attachment (fascia plantaris, achilles- and patella tendon (Fig 1B)) or peri-articularly (in the ankle or wrist).