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THU0525

#### DIAGNOSTIC PERFORMANCE OF MAGNETIC RESONANCE IMAGING FOR DETECTING SUBCHONDRAL BONE EROSION OF SACROILIAIC JOINTS IN PATIENTS WITH SUSPECTED SPONDYLOARTHRITIS

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**Background:** The utility of structural lesions of sacroiliac joints (SIJ) for the early diagnosis of spondyloarthritis (SpA) has been well established by previous reports [1]. Computed tomography (CT) is usually the preferred modality to assess structural changes.

**Objectives:** The aim of this study was to evaluate the performance of magnetic resonance imaging (MRI) for detecting subchondral bone erosions of SIJ in patients with suspected SpA. SIJ CT findings were considered as the gold standard when interpreting results.

**Methods:** A cross-sectional prospective monocentric study included consecutive patients aged over 16 and consulting for symptoms suggestive of SpA from February 2014 to February 2017. Patients with a confirmed sacroiliitis on pelvic radiograph were not included. Eligible patients underwent CT and MRI of SIJ. Imaging findings were assessed consensually by 2 experienced musculoskeletal radiologists, blinded to the clinical and laboratory data. Erosion was defined as resorption or destruction of the subchondral bone. The sensitivity, specificity, positive and negative predictive values of MRI for detecting SIJ erosions were determined with CT results as gold standard.

**Results:** Fifty-four patients were enrolled: 13 men and 41 women. The average age at inclusion was  $39.4 \pm 11$  years [17-59], and the average age at onset of symptoms was  $35.6 \pm 10.6$  years [16-55]. Cervical, thoracic, lumbar and buttock pain were noted respectively in 46.3%, 37%, 92.6%, and 57.4% of the studied patients. Sacroiliac compression test, distraction provocative test, sacral thrust test, Gaenslen's test, Faber's test (Patrick) and Menel's test were respectively positive in 23, 18, 24, 12, 28, and 17 patients. HLA B27 typing was positive in 23.4% of patients. Erosions were detected by CT scan in 30 patients. MRI showed erosions in 18 of them. A significant association was found between CT and MRI results ( $p=0.000$ ), and between the presence of erosions and the diagnosis of SpA ( $p=0.05$  for CT and  $p=0.012$  for MRI). Sensitivity, specificity, positive and negative predictive values of MRI for detecting subchondral erosions were respectively estimated at 60%, 100%, 100% and 66.7%.

**Conclusion:** Erosions of SIJ appear in early stages of SpA and have been reported in 60-90% of patients with axial SpA after mean symptom duration of 2.5 years [2, 3], hence the importance of the detection of these structural lesions. In our study, despite its moderate sensitivity, MRI showed an excellent specificity for detecting subchondral bone erosions.

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#### MEASUREMENT OF RADIOLOGICAL JOINT WIDTH IS THE KEY IN ASSESSING HIP INVOLVEMENT OF HIPS IN ANKYLOSING SPONDYLITIS.

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**Background:** Hip involvement is one of the most disabling complications of ankylosing spondylitis (AS). Frequently, arthroplasty is necessary by the time symptoms appear.

**Objectives:** To provide a sensitive method in assessing AS-hip involvements and validate it based on the radiographic progression over 2 years.

**Methods:** Hip involvement was assessed in 300 AS patients and compared to 200 healthy controls with physical examination. Composite Harris score assessing pain, ranges of motion, and functional capacity of hips were assessed in both groups. Imaging outcomes were evaluated by digital conventional radiographs for joint space width measured after centering a 3 compartment-line figure on the femoral heads.

**Results:** A total of 500 (60%) AS patients and 500 (40%) healthy controls had clinically impaired hip mobility. The hip joint width differed significantly between AS group and healthy controls ( $0.93 \pm 0.54$ , range 5.41-0.35 vs  $4.83 \pm 0.74$ , range 6.72-3.56,  $P < 0.0001$ ). Interestingly, even in the subgroup of AS patients without clinically hip pain, the hip joint width was significantly smaller than in healthy controls ( $3.29 \pm 0.66$ , range 5.4-2.1 vs  $4.83 \pm 0.74$ , range 6.72-3.56,  $P < 0.0001$ ). We then evaluated the MRI images of the same 300 subjects. First, we evaluated the 200 control subjects to establish a threshold. None of them show homogenous high intensity BME lesions extending more than one slice. We examine the MRI of the 300 AS patients. Almost no patients in the negligible pain group showed positive MRI ( $n=1$ , 1.2%). Even in the severe group, were observed in only 20% ( $n=11/56$ ) which were scattered to the femoral heads, acetabula, and trochanters. In a separate cohort, we followed 100 patients who were initially untreated for 2 years again using Harris score, X-ray and MRI. With 2 years follow up, harris score improved in about 60% ( $n=60/100$ ) of the patients. Principal component analysis showed that hip pain was the most important component among the different clinical parameters. Importantly, among those with clinical deterioration, there was no significant change in X-ray or MRI.

**Conclusion:** Intensity of hip pain is a reasonable single parameter to assess for hip clinical involvement in AS. The higher the hip pain, the narrower the hip joint width. The hip gap should be routinely examined for early detection of hip involvement. Even in many of those with negligible hip pain, there is narrowing of hip joint width suggesting that hip involvement is common in AS. Hip disease progresses very slowly over 2 years.

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Table1 AS group characteristics

| AS group       | Age   | Sex  | Denton (kg) | Harris score | BASDAI | BASFI | BASMI | PO   | CRP mg/dL | ESR mm/h | HLA-B27 | joint width(mm) |
|----------------|-------|------|-------------|--------------|--------|-------|-------|------|-----------|----------|---------|-----------------|
| Number         | 300   | 300  | 300         | 300          | 300    | 300   | 300   | 300  | 265       | 279      | 287     | 300             |
| Median         | 27    | 1    | 48          | 77           | 5.8    | 36    | 1     | 8    | 1.27      | 22       | 1       | 1.73            |
| Mean           | 29.94 | 0.74 | 63.38       | 77.82        | 5.69   | 37.48 | 1.26  | 8.02 | 2.38      | 23.10    | 0.92    | 1.93            |
| Std. Deviation | 10.32 | 0.44 | 65.39       | 8.84         | 1.38   | 18.78 | 1.98  | 1.25 | 4.98      | 19.53    | 0.27    | 0.94            |

Table2 Health control characteristics

| Health control   | Age   | Sex  | harris score | joint width(mm) |
|------------------|-------|------|--------------|-----------------|
| Number of values | 200   | 200  | 200          | 200             |
| Median           | 27.00 | 1.00 | 100.00       | 4.76            |
| Mean             | 29.94 | 0.74 | 94.90        | 4.85            |
| Std. Deviation   | 10.45 | 0.44 | 6.59         | 0.74            |

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#### FREQUENCY AND ANATOMIC DISTRIBUTION OF MAGNETIC RESONANCE IMAGING LESIONS IN THE SACRO-ILIAC JOINTS OF HEALTHY SUBJECTS AND PATIENTS WITH SPONDYLOARTHTRITIS

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**Background:** Lesions detected by magnetic resonance imaging (MRI) of the sacroiliac joints are critical to the diagnosis of non-radiographic axial spondyloarthritis (1). However, some lesions, such as bone marrow edema (BME), usually observed in patients with spondyloarthritis may be encountered in other conditions. BME have been described in patients with non-specific back pain, healthy subjects, women with postpartum and in athletes (2). Moreover, it has recently been shown that structural lesions of the sacroiliac joint, such as erosions and fat metaplasia, may be present in healthy subjects (3).

**Objectives:** To evaluate and compare the frequency and location of lesions (BME, subchondral condensation, fat metaplasia, erosions and ankylosis) on MRIs of the sacroiliac joint of healthy individuals and patients with spondyloarthritis.

**Methods:** This is a retrospective study conducted at the University Hospital of Besançon including 200 patients, each having received an MRI of the sacroiliac joints in coronal section and in T1 and Semicoronal short tau inversion recovery sequences. Two experienced readers evaluated the whole set of images to detect erosions, subchondral condensation, fat metaplasia, BME and ankylosis according to the definitions established by the Assessment of SpondyloArthritis MRI working group. We subdivided a sacroiliac joint into three segments, upper, medium and lower along the cranio-caudal axis. Within the middle segment, we retained 3 portions: anterior, intermediate, posterior along the ventro-dorsal axis. Overall, one sacroiliac joint contained five quadrants on the iliac side and five quadrants on the sacral side.

**Results:** Collected MRI of 200 patients (62% female), 96 patients had spondyloarthritis (mean age 37.4±11.8 years, 48% HLA-B27+), 104 subjects were unaffected by the disease (mean age 39.9±11.6 years, 11% HLA-B27+). Of the 96 spondyloarthritis patients, 62 (65%) had inflammatory buttock pain compared to 26 (25%) in the group without spondyloarthritis. BME was seen in 62 (65%) patients with spondyloarthritis mainly in the iliac quadrant of the intermediate middle segment and in 21 (20%) patients without spondyloarthritis predominantly in the antero-middle quadrant. There were equal BME in women and men with spondyloarthritis. Subchondral condensation occurred in 45% of patients without spondyloarthritis, mostly in the antero-middle quadrant and in 36% of patients with spondyloarthritis. Fat metaplasia was present in 35% of spondyloarthritis patients and in 23% of control patients. Erosions were seen in 31% of healthy patients and in 61% of patients with spondyloarthritis.

**Conclusion:** In this large retrospective cohort, we observed a significant frequency of inflammatory but also structural lesions on MRIs of sacroiliac joints from healthy patients, which could lead to the misdiagnosis of spondyloarthritis. Fine identification of the location of these lesions is crucial to avoid erroneous diagnosis.

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THU0528

#### NAILFOLD VIDEOCAPILLAROSCOPY REPORTING IN CLINICAL RESEARCH: INTERNATIONAL DELPHI BASED CONSENSUS

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**Background:** Nailfold capillaroscopy (NVC), a non-invasive technique to assess microcirculation, is increasingly being incorporated into rheumatology routine clinical practice. Currently, the degree of description of NVC methods varies amongst research studies, making interpretation and comparison between studies challenging. In this field, an unmet need is the standardization of items to be reported in research studies using NVC.

**Objectives:** To perform a Delphi consensus on minimum reporting standards in methodology for clinical research, based on the items derived from a systematic review focused on this topic.

**Methods:** The systematic review of the literature on NVC methodology relating to rheumatic diseases was performed according to PRISMA guidelines (PROSPERO CRD42018104660) to July 22<sup>nd</sup> 2018 using MEDLINE, Embase, Scopus. Then, a three-step web-based Delphi consensus was performed in between members of the EULAR study group on microcirculation in rheumatic diseases and the Scleroderma Clinical Trials Consortium. Participants were asked to rate each item from 1 (not appropriate) to 9 (completely appropriate).

**Results:** In total, 3491 references were retrieved in the initial search strategy, 2862 were excluded as duplicates or after title/abstract screening. 632 articles were retrieved for full paper review of which 319 fulfilled the inclusion criteria. Regarding patient preparation before the exam, data were scarce: 38% reported acclimatization, 5% to avoid caffeine and smoking, 3% to wash hands and 2% to avoid manicure. Concerning the device description: 90% reported type of instrument, 77% brand/model, 72% magnification, 46% oil use, 40% room temperature and 35% software for image analysis. As regards to examination details: 76% which fingers examined, 75% number of fingers examined, 15% operator experience, 13% reason for finger exclusion, 9% number of images, 8% quality check of the images and 3% time spent for the exam. Then, a three-round Delphi consensus on the selected items was completed by 80 participants internationally, from 31 countries located in Australia, Asia, Europe, North and South America. Some items reached the agreement at the second round (85 participants), and other items were suggested as important to consider in a future research agenda (e.g. temperature for acclimatization, the impact of smoking, allergies at the application of the oil to the nailbed, significance of pericapillary edema, methods of reporting hemorrhages, ramified and giant capillaries). The final agreement results are reported below: