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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 ± 11 years [17-59], and the average age at onset of symptoms was 35.6 ± 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 Mennel'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 HIP 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 ± 0.54 , range 5.41-0.35 vs 4.83 ± 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 ± 0.66 , range 5.4-2.1 vs 4.83 ± 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/L	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	67.38	77.82	5.69	37.48	1.36	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