The Patrick-FABER test in detecting active sacroiliitis in spondyloarthritis patients: a prospective study using magnetic resonance as reference standard

Sirs,

In course of spondyloarthritis (SpA), sacroiliac joint inflammation can be a frequent cause of low back pain (LBP) (1-3). The sacroiliac joint is a complex system which may generate different pain patterns and localisations. This makes hard to define the best clinical tests able to determine whether LBP is related to active sacroiliitis and/or sacroiliac joints dysfunction (4-6).

Among these, the Patrick-FABER test is routinely used in clinical practice for discriminating sacroiliitis from mechanical LBP (4-6).

Few studies have investigated the usefulness of the Patrick-FABER test, suggesting that this could be appropriately used to identify sacroiliitis also in SpA patients with no radiographic findings (nrSpA) (7-9).

The aim of this study was to evaluate sensitivity, specificity, and predictive value of the Patrick-FABER test in assessing active sacroiliitis in SpA patients and the possible correlation of the test with magnetic resonance imaging (MRI) inflammatory lesions.

We conducted a prospective cross-sectional study enrolling fifty-one consecutive SpA patients with chronic LBP (symptom duration of more than 3 months), aged 18–55 years, attending the Rheumatology Unit of the University Federico II, Naples (Italy). Axial involvement was defined as chronic low back pain (symptom duration of more than 3 months) and physician-reported presence of spinal involvement at enrolment. The study was approved by the local Ethics committee, and it was conducted in conformity with the Declaration of Helsinki and its later amendments.

Exclusion criteria were fibromyalgia, pregnancy, and presence of coxo-femoral joint replacement.

The same physician (MT) performed the clinical evaluation of each patient and the Patrick-FABER test. The assessor was blinded to the patients' clinical, laboratory or imaging data.

All patients underwent sacroiliac joint MRI, which were all reviewed by a musculoskeletal radiologist. The MRI sequences included simultaneous evaluation of T1-weighted (T1W) and fat-suppressed sequences [such as short tau inversion recovery (STIR) and T2-weighted fat-suppressed turbo spin-echo (T2-FS) sequences] (10).

Presence of subchondral bone marrow oedema was described as "active inflammatory lesion", while the presence of periarticular erosions and subchondral sclerosis were considered as "structural changes" (10).

Continuous data were described by median (25–75th Pctl), while categorical variables were described as percentages (%). Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy were calculated. Logistic regression was used to evaluate associations with MRI-oedema and other variables.

The main demographic and clinical characteristics of the study population are reported in Table I. Patients with a positive Patrick-FABER test demonstrated a higher prevalence of axial involvement (p=0.01) and of MRI bone marrow oedema at level of sacroiliac joints (p=0.0001). Patients with a positive Patrick-FABER test also demonstrated a lower prevalence of bDMARDs use (p=0.04), probably correlated with a more severe axial disease.

Patrick sign's sensitivity was 88.9% (95% CI 65.3–98.6%), specificity was 78.8% (95% CI 61.1–91.1%), positive predictive value (PPV), was 69.6% (95% CI 53.7–81.8%), negative predictive value (NPV) was 92.9% (95% CI 77.7–97.9%) and accuracy was 82.4% (95% CI 69.1–91.6%).

In univariate analysis, the Patrick-FABER test positivity significantly correlated with sacroiliac MRI inflammatory lesions (B=3.4; 95% CI 1.7–5.1). This correlation was further confirmed in multivariate

Table I. Main demographic and clinical characteristics of the study population.

	Entire population (n=51)	Patients with positive Patrick's FABER test (n=23)	Patients with negative Patrick's FABER test (n=28)	*p*-value
Age (years)	45 (32-52)	43 (32-51)	46.5 (32-52)	ns
Female, n (%)	33 (64.71)	15 (65.22)	18 (64.29)	ns
BMI	24.8 (22.2-27.6)	24.2 (21.9-27.9)	25.2 (22.4-27.6)	ns
Smokers, n (%)	19 (37.25)	9 (39.13)	10 (37.51)	ns
LBP, n (%)	51 (100)	23 (100)	28 (100)	ns
LBP duration (months)	78 (48-120)	70 (48-156)	78 (50-108)	ns
Disease duration (months)	54 (23-88)	46 (11-108)	60 (35.5-87)	ns
Axial involvement, n (%)	44 (86.27)	23 (100)	21 (75)	**0.01**
MRI SI oedema, n (%)	18 (35.29)	16 (69.57)	2 (7.14)	**0.0001**
MRI SI chronic lesions (erosions and/or sclerosis), n (%)	12 (23.53)	6 (26.09)	6 (21.43)	ns
Dactylitis, n (%)	6 (11.76)	2 (8.70)	4 (14.29)	ns
Enthesitis, n (%)	28 (54.9)	11 (47.83)	17 (60.71)	ns
Psoriasis, n (%)	41 (80.39)	17 (73.91)	24 (85.71)	ns
IBD, n (%)	8 (15.69)	4 (17.39)	4 (14.29)	ns
Uveitis, n (%)	4 (7.84)	2 (8.70)	2 (7.14)	ns
ESR (mm/h)	11 (7-19)	11 (7-17)	10.5 (4-19.5)	ns
CRP (mg/dl)	0.3 (0.2-0.4)	0.3 (0.1-0.8)	0.3 (0.2-0.4)	ns
ASDAS-CRP	3.05 (2.4-3.62)	3.26 (2.55-3.63)	2.7 (2.17-3.55)	ns
VAS-GH	7 (5-8)	7 (5-8)	6 (4-8)	ns
VAS pain	7 (5-8)	7 (5-8)	5.5 (4-8)	ns
BASDAI	6.4 (4.5-7.8)	6.5 (5.3-8)	5.9 (4-7.7)	ns
BASFI	4.8 (2.4-6.4)	5.3 (2.4-6.2)	3.9 (2.35-6.5)	ns
HAQ	1 (0.5-1.37)	0.87 (0.5-1.37)	1 (0.5-1.43)	ns
csDMARDS, n (%)	7 (12.73)	3 (13.4)	4 (14.29)	ns
bDMARDS, n (%)	32 (62.75)	11 (47.83)	21 (75)	**0.04**
CCS, n (%)	6 (11.76)	3 (13.04)	3 (10.71)	ns
NSAIDs, n (%)	29 (56.86)	15 (65.22)	14 (50)	ns

Values are expressed as median 25th-75th percentile, unless otherwise indicated.

BMI: body mass index; ns: not significant; LBP: low back pain; MRI: magnetic resonance imaging; SI: sacroiliac; IBD: inflammatory bowel disease; ESR: erythrocyte sedimentation rate; CRP: C-reactive protein; ASDAS: Ankylosing Spondylitis Disease Activity Score; VAS-GH: Visual Analogue Scale-Global Health; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; BASFI: bath ankylosing spondylitis function index; HAQ: HAQ health assessment questionnaire; csDMARDS: conventional synthetic disease-modifying anti-rheumatic drugs; bDMARDS: biologic disease-modifying anti-rheumatic drugs; CCS: corticosteroids; NSAIDs: non-steroidal anti-inflammatory drugs.

analysis adjusted for age and sex, showing that Patrick-FABER test positivity is significantly associated with sacroiliac bone marrow oedema (B= 3.4; 95% CI 1.7–5.2). No other significant associations were found among study variables and MRI data.

In conclusion, our study shows that the Patrick-FABER test can be useful to detect active sacroiliitis in SpA patients, correlating with active inflammatory lesions as diagnosed by MRI.

The major limitations of the study are the relatively small sample size, the cross-sectional design, and the variability of individual referred pain. Further studies are recommended to validate the Patrick- FABER test as a clinical "gold standard" for the indication to perform MRI and to identifiy active sacroiliitis in SpA.

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