Validation in Spanish of a screening questionnaire for the detection of psoriatic arthritis in patients with psoriasis

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Abstract

Objective. A patient self-administered questionnaire [PsA Screening and Evaluation (PASE)] has been developed and validated in English, but has not been tried in Spanish speaking populations. This study aimed to adapt and validate PASE in Spanish to screen Spanish speaking psoriasis patients for signs and symptoms of inflammatory arthritis.

Methods. Initial translation from English to Spanish (forward translation) was performed by two independent translators and the resulting versions were synthesized during a consensus meeting. The questionnaire was tried in a pilot study and resulted in a change in the agreement scale for a frequency scale with wording adaptation [Spanish PASE (PASE-S)].

Results. One hundred and eleven patients were screened with PASE-S; 25 with PsA (without previous treatments), 23 with psoriasis, 22 with psoriasis and OA and 41 with OA without psoriasis. The diagnosis of psoriasis was performed by a dermatologist, and a rheumatologist determined the diagnosis of PsA or OA. Patients with PsA had statistically significant higher symptoms, function and total PASE-S scores compared with those without PsA. Receiver operator curves showed an area under the curve of 0.79 (95% CI 0.69, 0.89) for the total score. A cut-off value \( \geq 34 \) showed sensitivity of 76%, and specificity of 74.4% for the diagnosis of PsA.

Conclusion. The validated PASE questionnaire is a self-administered tool that can be used to screen for PsA among patients with psoriasis in a Spanish speaking population. PASE was able to distinguish between symptoms of PsA and OA.

Key words: psoriasis, psoriatic arthritis, screening questionnaire, PASE.

Introduction

Between 6% and 42% of patients with psoriasis have PsA [1–6]. The prevalence of PsA varies between 0.04 and 0.74% according to different studies in different countries [5, 7–9]. Because psoriasis skin lesions usually precede the onset of joint symptoms by 10 years [7] dermatologists are in an ideal position to screen individuals for PsA early in the course of their disease. In recent years, different groups have developed self-administered questionnaires for the detection of PsA in the general population and in patients with psoriasis [10–15]. Husni and Qureshi described and validated the PsA Screening and
Evaluation (PASE) questionnaire for the diagnosis of inflammatory joint disease in patients with psoriasis [12, 13, 15]. The PASE was designed to help dermatologists identify individuals with psoriasis who would benefit from a prompt referral to rheumatologists. PASE consists of 15 questions divided into two subscales: symptoms subscale with seven questions and function subscale with eight questions. The scoring system provides a numeric scale; those individuals who are more likely to have PsA will score higher than individuals without PsA [12, 13, 15].

There are no validated screening tools in Spanish to be used in Argentina for the assessment of patients with psoriasis, so we sought to validate the PASE to help dermatologists to identify patients at higher risk of having early PsA. The objective of this study was to translate into Spanish and validate the PASE questionnaire for the detection of PsA in patients with psoriasis.

Patients and methods

Institutional review board approval was obtained from the Comite de Etica de Protocolos de Investigacion, and all patients signed an informed consent.

Cross-cultural validation

The questionnaire is already validated in English [12, 13, 15]. It was translated into Spanish by two independent bilingual physicians who were familiar with the use of the questionnaire. Subsequently, one experienced rheumatologist, with knowledge of the purpose of the study, examined semantic, idiomatic and conceptually translated the questionnaires and produced a single version. Retranslation into English was made by another bilingual physician who was unaware of the study and the original questionnaire in English. Both English versions were compared (original and retranslated), and as they were very similar the Spanish version was implemented in a pilot study involving six patients. As a result of this pilot study many patients referred difficulties with the questionnaire. Therefore, we chose to change the rating scale to a frequency scale (never, almost never, do not know, almost always, always) with wording adaptation. This new questionnaire was accepted and easily understood by two of the six patients in the pilot study and was then adopted (the translated PASE questionnaire is available as supplementary data, available at Rheumatology Online).

Study population

This was a cross-sectional study. Adults >18 years of age who were able to read and understand Spanish were eligible for the study. The gold standard for diagnosis of psoriasis and PsA was based on a clinical evaluation by a dermatologist and a rheumatologist, respectively. The diagnosis of OA was based on the clinical and radiographic evaluation by a rheumatologist. The diagnosis of PsA was based on the CASPARR [16] criteria.

Recruitment took place at the Hospital Italiano de Buenos Aires (HIBA) Dermatology and Rheumatology outpatient clinics. Four groups of patients were included: group 1 were patients with PsA without treatment with DMARDs followed at the HIBA rheumatology outpatient clinic; group 2 were patients with psoriasis without PsA (after evaluation by rheumatologists in the study), followed at the HIBA Dermatology outpatient clinic; group 3 were patients with psoriasis and OA followed at any or both of the outpatient clinics; and group 4 were patients with OA without psoriasis followed at the HIBA Rheumatology clinic. The two latter groups were included because of the involvement of the DIP joints, which usually poses difficulties in the differential diagnosis with PsA.

Clinical assessment

All patients were assessed by dermatologists (C.A., R.G.) and rheumatologists (L.G.F.G., E.R.S., J.E.R., D.A.N.) for psoriasis and PsA/OA-definitive diagnosis The following data were recorded in all PsA patients: disease duration, type of arthritis onset (monoarticular, oligoarticular or polyarticular), all assessments recommended by GRAPPA and OMERACT [17]: 66/68 painful and swollen joints, visual analogue scale disease activity by physician and patient, assessment of functional capacity (HAQ [18]), evaluation of the axial involvement (BASDAI–BASFI) [19–21], presence of enthesitis, dactylitis. Extension of the skin using the Psoriasis Area Severity Index (PASI) [22, 23] was assessed in all patients with psoriasis. In those in whom it was justified, radiological and laboratory studies were conducted to better assess patients’ diagnosis. All cases of PsA included had never received DMARD therapy.

Statistical analysis

Only patients with complete data were included. Continuous measures were summarized by mean and s.d., or by median and interquartile range where appropriate; categorical measures were summarized by per cent and 95% CIs. Wilcoxon rank-sum tests were used to test for differences between the PsA and non-PsA groups for total, function and symptom scores. Receiver operator curves (ROCs) were used to evaluate the discriminative value and to pick the best cut-point for total PASE score to predict PsA. Ninety-five per cent exact binomial CIs were constructed for both sensitivity and specificity. A sensitivity or specificity of 50% indicates that the criteria used for classification does not distinguish between groups better than chance; therefore, if the 95% CIs do not overlap 50%, we can conclude that our score does better than chance assignment at the 0.05 significance level.

Results

One hundred and eleven patients were included: 25 patients with PsA (group 1); 23 patients with psoriasis without arthritis (group 2); 22 patients with psoriasis and OA (group 3); and 41 patients with OA without
psoriasis (group 4). Demographic characteristics are summarized in Table 1.

There was a statistically significant difference between the scores of patients with PsA compared with those without PsA (Table 2). Patients with PsA had significantly higher symptom, function and total scores compared with all the other groups.

Fig. 1 presents the ROCs for discrimination of PsA of the PASE-S symptoms, function and total scores, which had an area under the curve of 0.81 (95% CI 0.71, 0.90); 0.73 (95% CI 0.61, 0.85) and 0.79 (95% CI 0.69, 0.89), respectively. There were no differences in mean total PASE-S score among males and females except in patients with OA alone, where the three males had significantly lower PASE-S scores [mean total score: 16.7 (S.D. 1.1) vs 30 (S.D. 10); P = 0.0281] than females.

The total PASE-S scores ranged from 15 to 69, and a total PASE score of 34 was determined to be the optimal cut-point for distinguishing PsA from non-PsA in all participants. At this cut-point, sensitivity was 76% (95% CI 55%, 90%) and specificity was 74% (95% CI 64%, 83%). A value \(>26\) showed 92% sensitivity and 48% specificity, and a cut-point value of 47 had 91% specificity and 36% sensitivity.

Forty-three patients were referred from the Dermatology outpatient clinic (all 23 patients with psoriasis alone, 13 of the 22 patients with psoriasis and OA and 7 finally diagnosed as PsA). PsA was diagnosed by the rheumatologists in 7 (19%) of them. Five of these seven patients had a PASE score \(>34\) (sensitivity 71%). Among this subgroup of patients referred from Dermatology, another seven patients had a PASE score of \(>34\) without PsA (specificity 84%).

**Discussion**

Skin involvement in psoriasis usually precedes articular involvement, and dermatologists usually are seeing these patients before any other specialist. In many settings it is often not possible for a rheumatologist to review all patients with psoriasis looking for PsA. Early diagnosis of PsA is very important nowadays, as early treatment will improve articular prognosis. Therefore, a screening questionnaire would be helpful for screening large number of subjects with psoriasis to identify probable cases with PsA and their referral to a rheumatologist.

Several questionnaires have been developed and tried with variable results, such as the ToPAS (the Toronto Psoriatic Arthritis Screen) [14]. This was aimed for the general population, and not just for patients with psoriasis, and showed high sensitivity and specificity for the diagnosis of PsA in all groups of patients in whom it was

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### Table 1 Characteristics of study population

<table>
<thead>
<tr>
<th>Patient characteristic</th>
<th>PsA</th>
<th>Psoriasis</th>
<th>Psoriasis + OA</th>
<th>OA alone</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>25</td>
<td>23</td>
<td>22</td>
<td>41</td>
<td>111</td>
</tr>
<tr>
<td>Age, mean (s.d.), years</td>
<td>48.6 (10.5)</td>
<td>47.9 (12.8)</td>
<td>66.9 (10.7)</td>
<td>61.7 (11.1)</td>
<td>56.9 (13.6)</td>
</tr>
<tr>
<td>Psoriasis duration, mean (s.d.), years</td>
<td>15.4 (11.8)</td>
<td>17.4 (19.7)</td>
<td>18.3 (12.9)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Articular involvement duration, mean (s.d.), years</td>
<td>4.2 (4.7)</td>
<td>—</td>
<td>11.7 (8.3)</td>
<td>10.6 (8.4)</td>
<td></td>
</tr>
<tr>
<td>Articular involvement, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Monoarthritis</td>
<td>5 (20)</td>
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<tr>
<td>Oligoarthritis</td>
<td>14 (56)</td>
<td></td>
<td></td>
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<tr>
<td>Polyarthritis</td>
<td>4 (16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Enthesitis alone</td>
<td>2 (8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAS28, mean (s.d.)</td>
<td>3.8 (1.3)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BASDAI, mean (s.d.)</td>
<td>4.5 (2.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASFI, mean (s.d.)</td>
<td>2.5 (2.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAQ, mean (s.d.)</td>
<td>0.67 (0.53)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASI, mean (s.d.)</td>
<td>2.6 (3.8)</td>
<td>6.5 (6.8)</td>
<td>1.6 (1.3)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

IQR: interquartile range. *Student’s t-test; †Mann-Whitney U-test.

### Table 2 PASE-S symptom, function and total scores of study population

<table>
<thead>
<tr>
<th>PASE-S score</th>
<th>PsA (n = 25)</th>
<th>Psoriasis (n = 23)</th>
<th>P-value*</th>
<th>PsA + OA (n = 22)</th>
<th>P-valuea (vs PsA)</th>
<th>OA (n = 41)</th>
<th>P-valuea (vs PsA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom</td>
<td>22.5 (6.4)</td>
<td>13.3 (4.6)</td>
<td>(&lt;0.0001)</td>
<td>16.6 (6.4)</td>
<td>0.0042</td>
<td>15.4 (5.6)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Function</td>
<td>21.1 (8.39)</td>
<td>12.8 (7)</td>
<td>0.0006</td>
<td>17.2 (7)</td>
<td>0.0876</td>
<td>13.7 (6.4)</td>
<td>0.0010</td>
</tr>
<tr>
<td>Total</td>
<td>43.3 (13.6)</td>
<td>26.1 (10.7)</td>
<td>(&lt;0.0001)</td>
<td>33.9 (12.8)</td>
<td>0.043</td>
<td>9 (10.3)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Total</td>
<td>43 (34–52)</td>
<td>24 (19–30)</td>
<td>(&lt;0.0001)</td>
<td>32 (23–41)</td>
<td>0.0159b</td>
<td>29 (20–35)</td>
<td>0.0001b</td>
</tr>
</tbody>
</table>

IQR: interquartile range. *Student’s t-test; †Mann-Whitney U-test.
ToPAS differs from previous questionnaires in that it includes pictures of psoriasis and nail lesions [14]. The Psoriasis and Arthritis Questionnaire (PAQ), only presented in abstract form, was subsequently modified and validated by Alenius et al. [10] (mPAQ). Ibrahim et al. [6] developed the PEST (Psoriasis Epidemiology Screening Tool) in England for the diagnosis of PsA in people with psoriasis with adequate sensitivity and specificity.

PASE was developed for the detection of inflammatory joint disease in patients with psoriasis at the Center for Skin and Related Musculoskeletal Diseases Clinic, a combined dermatology–rheumatology clinic at Brigham and Women’s Hospital in Boston [15]. The authors showed that the PASE was able to differentiate patients with PsA from those without PsA. A total PASE score of 47 was determined to be the optimal cut-point for distinguishing PsA from non-PsA with 82% sensitivity and 73% specificity. In a later, larger validation study with 190 patients they found that a cut-point of 44 had 76% (95% CI 59%, 88%) sensitivity and 76% (95% CI 68%, 82%) specificity [13].

In addition, a subgroup showed excellent reliability test–retest correlation coefficients that ranged from 0.35 to 0.80. Response to treatment was assessed in the PsA group, post-treatment PASE scores were significantly lower than pre-treatment scores (P = 0.034) [13].

We chose the PASE questionnaire because it had been validated in a large number of patients arising from a combined Dermatology–Rheumatology clinic. In this study, we were able to show that PASE-S, a self-administered tool was useful to discriminate patients with PsA from those without PsA including patients with OA.

Because of comprehension problems during the pilot testing of the translated questionnaire, we changed the type of scale (from agreement to frequency), and that might explain lower general scores and lower cut-off value in our study. However, our results showed similar sensitivity and specificity to that shown in the original developing and validation studies [13, 15]. As PASE is a continuous scale according to different needs different cut-off values could be chosen. For example, if there is a large rheumatology clinic to refer patients to, a lower cut-off value with higher sensitivity could be chosen, on the other hand if rheumatologists are scarce with large waiting lists a higher PASE value with higher specificity could be chosen.

In summary, we performed a cross-cultural validation of a screening questionnaire for PsA in patients with psoriasis. This should prove useful for the detection of PsA in patients with psoriasis in Spanish-speaking countries.

**Rheumatology key messages**

- The PASE is valid for the diagnosis of PsA in Spanish-speaking patients with psoriasis.
- PASE was able to discriminate between psoriasis patients with PsA and OA.

![ROC for PASE-S: total, symptom and function scores](image)
Acknowledgements

The PASE questionnaire is licensed to Pfizer and Merck.

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Supplementary data

Supplementary data are available at Rheumatology Online.

References