Screening for Psoriatic Arthritis in Korean Psoriasis Patients Using the Psoriatic Arthritis Screening Evaluation Questionnaire

Hyang-Suk You, Gun-Wook Kim, Hyun-Ho Cho, Won-Jeong Kim, Je-Ho Mun, Margaret Song, Hoon-Soo Kim, Hyun-Chang Ko, Moon-Bum Kim, Seung-Geun Lee, In-Sook Lee, Byung-Soo Kim

1Department of Dermatology, Pusan National University School of Medicine, Busan, 2Department of Dermatology, Pusan National University Yangsan Hospital, Yangsan, Departments of 3Rheumatology and 4Diagnostic Radiology, Pusan National University, 5Biomedical Research Institute, Pusan National University Hospital, Busan, Korea

BACKGROUND: Psoriatic arthritis (PsA) is chronic seronegative inflammatory arthritis that causes irreversible joint damage. Early recognition of PsA in patients with psoriasis is important for preventing physical disability and deformity. However, diagnosing PsA in a busy dermatology outpatient clinic can be difficult. OBJECTIVE: This study aimed to validate the Psoriatic Arthritis Screening and Evaluation (PASE) questionnaire for the detection of PsA in Korean patients with psoriasis. METHODS: The PASE questionnaire was prospectively given to 148 patients diagnosed with psoriasis but without a previous diagnosis of PsA. All patients underwent radiologic and laboratory examinations, and a subsequent clinical evaluation by a rheumatologist. RESULTS: Eighteen psoriasis patients (12.2%) were diagnosed with PsA according to the Classification Criteria for Psoriatic Arthritis. The PASE questionnaire scores of differed significantly between PsA and non-PsA patients. Receiver operator characteristic analysis showed an area under the curve of 0.82 (95% confidence interval: 0.72, 0.92) for PASE score. A PASE score cut-off of 37 points had a sensitivity of 77.8% and specificity of 82.3% for the diagnosis of PsA. CONCLUSION: The PASE questionnaire is a simple and convenient screening tool for detecting PsA in Korean dermatology clinics. A PASE questionnaire score of 37 points appears to be an appropriate cut-off for screening Korean psoriasis patients. (Ann Dermatol 27(3) 265 ∼ 268, 2015)

KEYWORDS: Psoriatic arthritis, Questionnaires, Screening

INTRODUCTION

Psoriatic arthritis (PsA) is a type of inflammatory arthritis that causes irreversible joint damage. The major signs and symptoms of PsA include sacroiliitis, dactylitis, and enthesitis. However, it is impossible for dermatologists in busy clinics to perform detailed joint examinations for all psoriasis patients to diagnose PsA. Therefore, a simple screening tool is required to enable dermatologists to detect PsA at an early stage. Several screening tools such as the Psoriasis Epidemiology Screening project, the Psoriatic Arthritis Screening and Evaluation (PASE), and the early arthritis for psoriatic patients have been reported in foreign literature. Among them, the PASE questionnaire is a well-validated self-administered screening tool that can be used to screen for patients with psoriasis. Accordingly, this study validated the PASE questionnaire for the detection of PsA in Korean patients with psoriasis in a dermatologic outpatient clinic setting.
Table 1. Clinical characteristics of psoriatic patients with or without PsA

| Characteristic                      | PsA (n=18)       | Non-PsA (n=130) | p-value |
|-------------------------------------|------------------|-----------------|---------|
| Age (yr)                            | 47.9 (25∼0)      | 42.5 (14∼73)    | 0.230*  |
| Sex (male : female)                 | 11 : 7           | 79 : 51         | 0.596†  |
| Psoriatic nail                      | 5 (27.8)         | 41 (31.5)       | 0.490†  |
| Dactylitis                          | 11 (61.1)        | 4 (3.1)         | <0.001† |
| Enthesitis                          | 2 (11.1)         | 0               | -       |
| Sacroilitis on X-ray                | 4 (22.2)         | 1 (0.8)         | 0.002†  |
| Psoriasis Area Severity Index       | 11.29            | 11.04           | 0.562*  |
| Moll & Wright’s classification      |                  |                 |         |
| Asymmetric oligoarthritis           | 11               |                 |         |
| Symmetric polyarthritis             | 0                |                 |         |
| Arthritis mutilans                  | 0                |                 |         |
| Spondylitis                         | 4                |                 |         |
| Distal interphalangeal predominant  | 3                |                 |         |

Values are presented as median (range), number only, or number (%). PsA: psoriatic arthritis. Inter-group comparisons (PsA vs. Non-PsA) were performed using the *Wilcoxon rank-sum test, †the χ² test, or ‡Fisher’s exact test.
Table 2. Median PASE scores of PsA and non-PsA patients

| Factor          | PsA (n=18)     | Non-PsA (n=130) | p-value* |
|-----------------|----------------|-----------------|---------|
| Symptom score   | 21 (16.75–24.25)| 14 (11–17)      | <0.05   |
| Function score  | 21 (15.75–27.5)| 13.5 (8–17)     | <0.05   |
| Total score     | 39 (25.75–52.25)| 26.5 (21–34)    | <0.05   |

Values are presented as median (Interquartile range). PASE: Psoriatic Arthritis Screening and Evaluation, PsA: psoriatic arthritis.

*Inter-group comparisons (PsA vs. non-PsA) were performed using the Wilcoxon rank-sum test.

**Fig. 1.** Receiver operator curves (ROC) curves for total, symptom, and functional Psoriatic Arthritis Screening Evaluation (PASE) scores. *ROC were used to identify the optimal cut-off of the total PASE score.

However, the PASE scores differed significantly between the PsA and non-PsA groups (Table 2). Patients with PsA had significantly higher symptom, function, and total PASE scores. Response scores to 14 of the 15 questions of the PASE differed significantly between the PsA and non-PsA groups; only responses to question 1, “I feel tired for most of the day,” did not differ significantly (data not shown).

Total PASE scores ranged 15 to 72, and a total PASE score of 37 was found to be the optimal cut-off for differentiating between PsA and non-PsA patients by ROC analysis. At this cut-off, the diagnostic sensitivity and specificity of the PASE were 77.8% and 82.3%, respectively (Fig. 1), with positive and negative predictive values of 37.8% and 96.4%, respectively.

**DISCUSSION**

Between 8% and 30% of patients with psoriasis develop PsA and require care for both skin and joint involvement. Fleischer et al. report that 69% of patients with psoriasis vulgaris suffer from joint pain. However, despite the high incidence of PsA, dermatologists cannot perform full physical and laboratory examinations for all psoriasis patients because of demanding outpatient clinic schedules. Although several questionnaires have been developed to screen for PsA, they are rarely used in Korean dermatologic clinics. However, the PASE questionnaire has been validated in a large study of patients with psoriasis in a combined dermatology-rheumatology clinical setting.

Walsh et al. report that the PASE questionnaire has the highest sensitivity and specificity when applied to patients not on systemic therapy; they also found that it was easily administered in outpatient clinics. Therefore, we administered the PASE questionnaire to detect PsA and help determine the prevalence of PsA in specific populations. The diagnosis of PsA is difficult, because there is no specific diagnostic test. Diagnoses are made primarily on the basis of clinical features as well as laboratory and radiologic findings. The clinical signs and symptoms of PsA include dactylitis, enthesitis, spinal inflammation, and asymmetric joint involvement. Therefore, we performed physical, laboratory, and radiologic testing on all psoriasis patients to investigate the relationships of PsA and test results with PASE scores. The prevalences of dactylitis and sacroiliitis were significantly higher in patients with PsA, which is concordant with previous studies. Therefore, dermatologists should be aware of these symptoms in suspected cases.

In the present study, a total PASE score of 37 or more detected 77.8% of true-positives cases of PsA (i.e., sensitivity of 77.8%); this indicates further evaluation is required to accurately diagnose PsA. The sensitivity and specificity of this PASE cut-off are similar to those in previous studies using the PASE but with different cut-offs. Husni et al. report that a total PASE score of 47 was able to differentiate between PsA and non-PsA patients with a sensitivity and specificity of 82% and 73%, respectively. This large difference in cut-offs between studies can be explained by the influences of factors such as ethnicity, populations, health status, and employment type. The Korean PASE missed 4 of the 18 patients with PsA who had a total score less than 37. On the other hand, only 14 of the 37 patients with a score more than 37 were diagnosed with PsA. The other 23 were diagnosed with osteoarthritis, spondylitis, and other spondyloarthropathies by a rheumatologist. Thus, al-
though a high PASE score indicates a greater probability of PsA, it is still difficult for dermatologists to distinguish PsA from other types of inflammatory arthritis by using this metric.

PsA is fairly common among Korean patients with psoriasis and results in impaired physical function and disability. The present study shows that the adoption of the PASE questionnaire for screening psoriasis outpatients could substantially improve early PsA diagnosis. Furthermore, the results indicate a cut-off of 37 points is appropriate for screening Korean patients with psoriasis, with a sensitivity of 77.8% and specificity of 82.3%. Nevertheless, additional large multicenter studies are required in Korea to confirm our results. Finally, we hope that this study increases interest in PsA in the dermatology community.

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