

Study of prevalence and characteristics of psoriatic arthritis in outpatient dermatology unit, King Chulalongkorn Memorial Hospital

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ABSTRACT :

HANTHAVICHAI S,* NUMKARUNARUNROTE N,** PONGPRUTTIPAN M.* STUDY OF PREVALENCE AND CHARACTERISTICS OF PSORIATIC ARTHRITIS IN OUTPATIENT DERMATOLOGY UNIT, KING CHULALONGKORN MEMORIAL HOSPITAL. THAI J DERMATOL 2013; 29: 108-120.

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Background : The newly developed Classification criteria for Psoriatic Arthritis (CASPAR) criteria has been used for many epidemiologic studies since 2006, this classification showed its high specificity and sensitivity. In Thailand, there is still lack of national data for psoriatic arthritis prevalence by using CASPAR criteria.

Objectives : To determine the prevalence, risk factors and clinical characteristics of PsA in a dermatology outpatient unit, King Chulalongkorn Memorial Hospital.

Method : A cross-sectional observational study was conducted. History and Physical examination has been done by dermatologist. Our patients were evaluated for PsA according to CASPAR criteria. Demographic and clinical parameters have been recorded.

Results : The number of patients who diagnosed psoriatic arthritis by CASPAR criteria were 36 (39.5%) from 91 psoriatic patients. Results from multivariate analysis demonstrated that nail involvement (odd ratio = 4.33; 95%CI=1.02-18.34) and family history of psoriasis (Odd ratio = 4.65; 95%CI=1.58-13.68) were significantly associated with PsA. Oligoarthritis (68.6%) was the most common manifestation pattern, followed by spondylitis (31.4%) and enthesitis (25.7%).

Conclusion : The high prevalence of PsA is found in a dermatological outpatient unit, King Chulalongkorn Memorial Hospital. Positive family history of psoriasis and nail psoriasis are independent risk factors.

Key words: Psoriasis, psoriatic arthritis, prevalence, risk factors

บทคัดย่อ :

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ที่มา : เกณฑ์ CASPAR (CIASsification criteria for Psoriatic ARthritis) แสดงให้เห็นว่ามีความไว และความจำเพาะสูงต่อการจำแนกโรคข้ออักเสบสะเท็ดเงิน จึงได้นำมาใช้ในการวิจัยทางระบาดวิทยาของโรคข้ออักเสบสะเท็ดเงิน ตั้งแต่ปี ค.ศ. 2006 อย่างแพร่หลาย สำหรับประเทศไทยข้อมูลการศึกษาดังกล่าวยังมีเป็นจำนวนน้อย

วัตถุประสงค์ : เพื่อศึกษาความชุก ปัจจัยเสี่ยง และลักษณะทางคลินิกของโรคข้ออักเสบสะเท็ดเงินในกลุ่มผู้ป่วยสะเท็ดเงิน แผนกผู้ป่วยนอกผิวหนัง โรงพยาบาลจุฬาลงกรณ์

วิธีการวิจัย : การวิจัยแบบภาคตัดขวางจากการสังเกตในผู้ป่วยสะเท็ดเงิน โดยประเมินว่ามีข้ออักเสบสะเท็ดเงินหรือไม่ตามเกณฑ์ CASPAR และบันทึกข้อมูลประชากรและตัวแปรทางคลินิกโดยแพทย์แผนกผิวหนัง

ผลการวิจัย : พบผู้ป่วยข้ออักเสบสะเท็ดเงิน 36 ราย หรือมีความชุกเท่ากับ 39.5% จาก ผู้ป่วยทั้งหมด 91 ราย ผลการวิเคราะห์โดย Multivariate analysis พบว่าสะเท็ดเงินที่เล็บ (Odd ratio = 4.33; 95%CI=1.02-18.34) และ ประวัติสะเท็ดเงินในครอบครัว (Odd ratio = 4.65; 95%CI=1.58-13.68) เป็นปัจจัยเสี่ยงที่มีนัยสำคัญทางสถิติ ($p=0.046$ และ $p=0.005$ ตามลำดับ) ลักษณะข้ออักเสบที่พบบ่อยที่สุด เป็นชนิด oligoarthritis (68.6%) รองลงมาได้แก่ spondylitis (31.4%) และ enthesitis (25.7%) ตามลำดับ

สรุปผลการวิจัย: ความชุกของข้ออักเสบสะเก็ดเงินในแผนกผู้ป่วยนอกผิวหนัง โรงพยาบาลจุฬาลงกรณ์มีค่อนข้างมาก โดยมีปัจจัยเสี่ยงสำคัญได้แก่ สะเก็ดเงินที่เล็บ และประวัติสะเก็ดเงินในครอบครัว

คำสำคัญ: สะเก็ดเงิน, ข้ออักเสบสะเก็ดเงิน, ความชุก, ปัจจัยเสี่ยง

Introduction

Psoriatic arthritis (PsA) is a heterogeneous chronic inflammatory spondyloarthritis that leads to disabilities in psoriatic patient. Up to 20% of affected patients exhibit extremely destructive and disfiguring forms of the disease, and PsA is associated with increased mortality.^{1,2}

The exact prevalence of PsA is unknown due to the variability in case identification, difficulty in making interpretation and application of study. Several classification criteria such as Moll and Wright, Bennett, Gladman, Vasey and Espinoza, the European Spondylarthropathy Study Group (ESSG) and Fournie have been proposed and used in the literature⁴⁻⁷, but none have been universally accepted or validated.

In 2006, the newly developed Classification criteria for Psoriatic Arthritis (CASPAR) criteria has been proposed from the large, prospective, multi-center international study.⁸ This classification showed its simplicity, high specificity (97–99%), good sensitivity (91–100%) and were easier to use than pre-existing classification criteria.⁹ This classification allows clinician to diagnose even in cases of PsA without psoriasis, as well as in positive rheumatoid factor patients.

Even though CASPAR criteria have been derived from specific rheumatology clinics setting, it can also be applied to the general population or to other clinic practice such as dermatology clinic and family medicine clinic.¹⁰ Furthermore, the sensitivity and specificity of the CASPAR criteria are high in established and early PsA.¹¹ This new set of validated classification criteria thus have the potential to be used as “diagnostic criteria” for PsA.¹² This greatly help research in epidemiological studies on the prevalence and incidence of PsA in various countries.¹³⁻¹⁶

In Thailand, there is still lack of national data related to the diagnosis of psoriatic arthritis in patients with psoriasis by using CASPAR criteria. This study aims to report the prevalence and describe the clinical and radiological features of psoriatic arthritis from the outpatients dermatology clinic at King Chulalongkorn Memorial Hospital.

Patients and methods

We carried out an observational cross-sectional study in patients with psoriasis who visited the Outpatient's Department of Dermatology at King Chulalongkorn Memorial Hospital between March 2011 and December 2011. Inclusion criteria are adults (older than 16 years), with established diagnosis of psoriasis (clinical or histological), without limitations regarding

any form or onset age of psoriasis and convenience sampling was done. This study has been approved by institutional review board of Chulalongkorn University (IRB No. 258/54), and all patients who agreed to participate in the study are required to sign the informed consent form.

Psoriasis's clinical evaluation was performed by a dermatologist. During the dermatological assessment, patient characteristic and clinical data were recorded including gender, age, age of psoriasis onset, the type of psoriasis, psoriasis area and severity index (PASI), sites of psoriasis lesions, nail involvement, family history of psoriasis, underlying medical illness, previous and current treatments of psoriasis. The type of psoriasis was classified as plaque type, guttate type, erythrodermic type, pustular type, sebopsoriasis and other types.

All patients were also evaluated by the protocol for evaluation of joint manifestations, which included the presence of peripheral joint pain/ swelling, spinal involvement (spinal pain, buttock pain, anterior chest wall pain, spinal mobility and chest expansion), dactylitis, enthesitis, previous diagnosis of psoriatic arthritis and type of joint involvement. Plain radiographs (hands, feet and lumbosacral spine) and serum rheumatoid factor were performed in the suspected cases of psoriatic arthritis. All radiographic findings were reported by sub-specialist radiologist in musculoskeletal radiology.

The diagnosis of psoriatic arthritis was made according to the CASPAR criteria. The criteria require that subjects must have inflammatory articular disease (joint, spinal and enthesal) and meet the criteria by attaining a score ≥ 3 among the following five categories: (i) current psoriasis, a personal history of psoriasis, or a family history of psoriasis; (ii) nail dystrophy; (iii) a negative rheumatoid factor; (iv) dactylitis; (v) radiographic evidence of juxtaarticular new bone formation. Current psoriasis is assigned a score of 2; all other features are assigned a score of 1.

The presence of spinal, enthesal or joint inflammation is a mandatory feature required to classify a patient according to the CASPAR criteria and was considered on the basis of a careful history, physical examination, laboratory tests and imaging procedures. The diagnosis of peripheral arthritis required the presence or history of one or more joints with soft tissue swelling at least 6 weeks. Spondylitis or axial involvement was considered present when there was radiological evidence of sacroiliitis, syndesmophytes, vertebral squaring, ligamentous ossification and shining corners of the spine. Enthesitis was defined by past or present spontaneous pain or tenderness at peripheral enthesal sites with radiographic evidence such as enthesophytes or bone erosions at the enthesal insertion into the cortical bone.

Statistical Analysis

The prevalence was calculated by dividing the number of patients with PsA by the number of all participated patients ($n = 91$). The data of all patients were used for subgroup analyses based on the presence or absence of PsA. Continuous variables are described through means, medians, standard deviations (SD), standard errors of the means (SEM) and inter-quartile (IQ) ranges. For the other variables, frequency tables and percentage are reported. Comparisons of two groups were made using χ^2 test or Fisher's exact test for non-continuous variables. To compare continuous variables, we used Student's t test or Mann-Whitney's U statistic (where appropriate). In addition, we performed a multivariate logistic regression analysis after adjustment for age, sex, duration of psoriasis, duration of psoriasis, type of psoriasis and PASI score to identify independent risk factors. The p -value less than 0.05 was considered statistically significant. All statistical analyses were performed with SPSS software (SPSS version 13, Chicago, IL, USA).

Results

Altogether 91 patients with psoriasis were enrolled consecutively at outpatient department. According to

CASPAR criteria, 36 patients (39.5%) were considered to have PsA. In twenty two (62.2%) of these patients, a diagnosis of PsA had already been established. In addition, fourteen symptomatic patients without a previous diagnosis of rheumatologic disease were diagnosed with PsA. Thus, the prevalence of PsA in this population of psoriatic patients was 39.5% with 38.8% of the cases were diagnosed for the first time.

The demographic and clinical characteristics of patients with or without PsA are shown in Table 1.

There was no difference between the groups regarding the average age, gender, mean age at onset of psoriasis, duration of psoriasis, type of psoriasis, mean PASI score and co-existing medical illness. Patients with psoriatic arthritis had an average age of $47.6 (\pm 14.7)$ years, the average age of the population without arthritis was $43.7 (\pm 13.8)$ years.

Patients with PsA had higher percentage of family history of psoriasis (91.2% vs 67.9%) than patients without PsA. Patients with PsA had lower median patient global assessment score (70 vs 80) than those without PsA. Nail (91.2% vs 67.9%) and facial (54.3% vs 30.2%) involvement were significantly more common in patients with PsA than those without PsA.

Table 1 Demographic and clinical characteristics of the subjects enrolled in the study with psoriatic arthritis (PsA) compared to psoriasis alone (N=91)

	Psoriasis alone (n = 55)	PsA (n = 36)	p value ^a
Gender			0.119
M(%)	34(62.8)	17(46.7)	
F(%)	21(37.2)	19(53.3)	
Current age in years, mean(SD)	43.77(13.86)	47.68(14.70)	0.209
Age at onset, median(IQR)	35(21-49)	32(11-52)	0.609
Duration in years, mean(SD)	10.56(7.59)	11.12(7.52)	0.405
Family history(%)	9(17.0)	16(45.7)	0.030 ^a
PASI score, median(IQR)	3.9(1.1-6.7)	4(1.5-6.5)	0.756
PGA, median(IQR)	80(50-120)	70(55-95)	0.046 ^a
Co-existing medical illness			
diabetes mellitus(%)	2(3.8)	5(14.3)	0.109
hypertension(%)	8(15.1)	9(25.7)	0.217
dyslipidemia(%)	9(17.0)	6(17.1)	0.984
coronary heart disease(%)	1(1.9)	0(0)	0.414
cerebrovascular disease(%)	0(0)	1(2.9)	0.216
HIV infection(%)	2(3.8)	3(8.6)	0.341
chronic kidney disease(%)	1(1.9)	0(0)	0.414
liver disease(%)	1(1.9)	4(11.6)	0.079
Clinical manifestations			
guttate(%)	20(38.7)	13(37.1)	0.955
plaque(%)	48(90.6)	30(85.7)	0.483
pustular psoriasis(%)	0(0)	1(2.9)	0.216
erythroderma(%)	2(3.8)	2(5.7)	0.669
sebopsoriasis(%)	1(1.9)	1(2.9)	0.765

	Psoriasis alone (n = 55)	PsA (n = 36)	<i>p</i> value ^a
Site of lesions			
face(%)	16(30.2)	19(54.3)	0.025 ^a
scalp(%)	44(82.7)	29(82.9)	0.984
inverse psoriasis(%)	10(18.9)	10(28.6)	0.288
upper extremities(%)	39(73.6)	28(79.2)	0.490
lower extremities(%)	46(86.8)	30(85.7)	0.885
trunk(%)	47(88.7)	30(85.7)	0.681
palm and sole(%)	4(7.5)	3(8.6)	0.863
nail(%)	36(67.9)	32(91.2)	0.010 ^a

Abbreviation : PASI, psoriasis area and severity index; PGA, patient global assessment score.

^a significant *p* value are shown in boldface.

Results of multivariate logistic regression analysis are shown in Table 2. The regression analysis demonstrated that PsA was significantly associated with nail psoriasis (adjusted odd ratio(OR), 4.33; 95% CI, 1.02-18.34) and family history of psoriasis (adjusted OR, 4.65; 95% CI, 1.58-13.68) after controlling for age, sex, age at onset of psoriasis, duration of psoriasis, type of psoriasis and PASI score.

Table 2 Multivariate regression analysis assessing factors associated with psoriatic arthritis

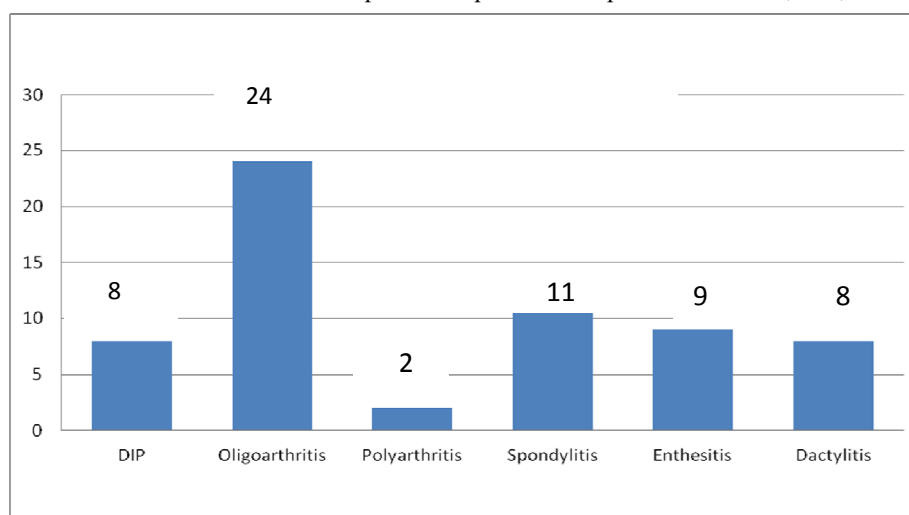
Factors	Adjusted Odd Ratio (95% CI)	<i>p</i> value ^a
Family history	4.65(1.58-13.68)	0.005 ^a
Nail involvement	4.33(1.02-18.34)	0.046 ^a
Facial lesions	2.15(0.78-5.92)	0.138
PGA	0.97(0.94-1.02)	0.072

Abbreviation : PGA, patient global assessment score.

^a significant *p* value are shown in boldface.

The manifestation patterns of PsA were presented in Chart 1. Among patients with PsA, a total of 24 (68.6%) subjects presented with inflammatory peripheral oligoarthritis, followed by spinal involvement in 11 (31.4%) subjects, and enthesitis in 9 (25.7%) subjects.

Dactylitis and DIP involvement were found in eight patients (22.9%). The polyarticular form was found only two cases (5.7%). Arthritis mutilans was not found in our population.

Chart 1 Joint manifestation patterns in patients with psoriatic arthritis (n=36)

Abbreviation : DIP, distal interphalangeal joint

Seventeen subjects (47.3%) have only one manifestation pattern of PsA, but nineteen subjects (52.7%) have mixed manifestation features of PsA. Eleven patients (30.5%) have combination of two features of PsA such as oligoarthritis with dactylitis (3 cases), oligoarthritis with spondylitis (3 cases) and oligoarthritis with enthesitis (2 cases). Six cases (16.6%) have three psoriatic arthritis patterns such as oligoarthritis, spondylitis with enthesitis (2 cases). Two subjects (5.6%) have four psoriatic arthritis patterns (oligoarthritis, spondylitis, enthesitis and dactylitis) combination.

Table 3 X-ray findings in patients with psoriatic arthritis (n=36)

Radiographic findings Number(%)
Lumbosacral region
Syndesmophytes 5(13.8)
Paravertebral ossification 3(8.3)
Enthesial erosion 3(8.3)
Sacroilitis ^a grade 0 27(75)
grade II 3(8.3)
grade III 4(11.1)
grade IV 2(5.5)
Hand and feet regions
DIP erosion 9(25)
Tuft osteolysis 3(8.3)
Other joint erosion 8(22.2)
Juxtaarticular new bone formation 12(33.3)
Enthesial erosion 3(8.3)

^a Sacroilitis grading : grade 0 – normal; grade I – some blurring of the joint margins or suspicious;
 grade II – minimal sclerosis with some erosion; grade III – definite sclerosis or erosions
 grade IV – complete ankylosis

X-ray findings in patients with psoriatic arthritis at lumbosacral and hand-feet regions were shown in Table 3. Juxtaarticular new bone formation (12 cases or 33.3%) was the most common radiographic findings at hand-feet regions as in Figure 1, followed by distal interphalangeal joint (DIP) erosion (9 cases or 25%) and other joint erosion (8 cases or 22.2 %).



Figure 1 Case 1. Anteroposterior radiograph of right foot shows increased density and juxtaarticular bony proliferation of distal phalanx of the first digit (arrows) with soft-tissue swelling.

Entheseal erosions were revealed at lumbosacral and hand-feet regions in each three patients. Most common radiographic findings at lumbar spine region are syndesmophytes (Figure 2) and paravertebral ossification in five (13.8%) and three subjects (8.3%) respectively. Three-quarters of patients with psoriatic arthritis have no bone changes in sacroiliac joints. The most common radiographic evidence of sacroiliitis was

bilateral grade III disease (4 cases or 11.1%), followed by grade II and grade IV (ankylosis of entire sacroiliac joint) in three and two cases respectively.

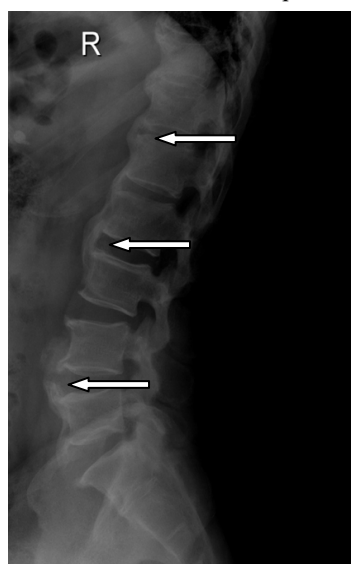


Figure 2 Case 2. Lateral radiograph of lumbar spine shows the characteristic thick ossification (syndesmophytes) at the periphery of the annulus fibrosus (arrows).

We also found abnormal radiological changes in four asymptomatic psoriasis patients. It was noted that joint erosions, enthesal bony proliferations and juxtaarticular new bone formations were present in two asymptomatic subjects. Bilateral sacroiliitis grade II was found in one case. The other subject had enthesal bony proliferations in lumbar spine region.

Discussion

It has been difficult to estimate the prevalence of psoriatic arthritis because it can vary from 6-42% in patients with psoriasis seen at specialist clinics. The

heterogeneity of the prevalence in many epidemiological studies have been attributed to the different sampling of patients, frequency of psoriasis in different geographical areas, different ethnics, average population age, different diagnostic criteria and the methodology of the study¹⁷.

The CASPAR criteria has many advantages over previous classification criteria that have been proposed. First, the CASPAR criteria use some elements of the earlier criteria, but only those found to be independently predictive of PsA were included in the final set. Second, juxta-articular new bone formation was included as a feature of PsA in the CASPAR criteria but not in any previous criteria. Third, the inclusion of dactylitis and enthesitis has made possible the classification of a patient as having PsA in the absence of true arthritis. Fourth, because family history is included then the absence of psoriasis is permitted as long as other typical features of PsA are present.

Later epidemiological studies also show variability in the prevalence of psoriatic arthritis even classified by the CASPAR criteria. In the previous from Thailand¹⁸ and Brazil cross-sectional study¹⁹, the prevalence rate of PsA reached 43.05% and 35% respectively. But the large and recent China²⁰ and German epidemiological studies²¹ had the diagnosis of PsA in 5.8% of 1,928 subjects and 20.6% of 1,511 patients respectively. Our study also found a high prevalence of psoriatic arthritis (39.5%) due to including the patients who were established PsA and those who were newly diagnosed at

the moments of participation. Other explanations of higher prevalence of PsA are the selection of cases who visited in tertiary hospital care tends to have a higher prevalence and more intense systematic researches tend to identify more cases. The study patients had their diagnosis confirmed after clinical evaluation by a dermatologist, a rheumatologist and a radiologist; so our study should have estimates closer to reality.

The most common of our patient phenotype is psoriasis plaque type (85.7%vs90.6%), followed by guttate type (37.1%vs38.7%) and erythroderma type (5.7%vs3.8%) in group with and without PsA respectively. But no difference was seen between the groups regarding the type of psoriasis and the diagnosis of psoriatic arthritis which supports previous studies.¹⁸⁻²¹

Despite the small sample size in our study, statistical significance was achieved in important variables. We found that nail involvement and familial history of psoriasis were independent risk factors for developing PsA, which were expected due to the part of the CASPAR criteria. Nail lesions occur in 40%–45% of the patients with psoriasis non-complicated by arthritis, and can affect up to 87% of the patients with PsA. The association between psoriatic nail and arthritis was also demonstrated in the studies by Jones et al.²² and Wilson et al.²³ The nail apparatus has close anatomical association and functional relationship with the distal phalanges and extensor tendons of the fingers. Then the association between nail disease and the

adjacent distal interphalangeal joints involvement suggests a common local inflammatory mechanism, rather than coincidence of skin and joints.

The heritability of the psoriasis as well as of PsA among first-degree relatives has been confirmed in a number of studies.^{24,25} The prevalence of psoriasis is 19 times higher among first degree relatives of PsA patients compared with the general population.²⁶ PsA patients with early onset were also had a family history of psoriasis or PsA.²⁷

The clinical manifestations of PsA varies in several reported case series.²⁸ In our study the clinical manifestations of PsA and the frequencies of PsA subtypes were oligoarticular involvement in 68.6%, followed by spondyloarthritis observed in 31.4% and enthesitis in 25.7% of patients. Many studies, such as the Brazilian study by Bonfiglioli et al²⁹ and the china study by Q Yang et al. are in accordance with our results which the oligoarticular form is the most common finding. In contrast to previous Thai study by Buttum et al. which reported that spondylitis was the most common pattern of PsA (83.1%) followed by polyarthritis and oligoarthritis Reich K et al. and Carneiro JN et al. demonstrated that polyarthritis were the most common PsA manifestation pattern occurred in 58.7% and 67% respectively. Clinical patterns of PsA do represent a dynamic disease in the majority of patients, for example oligoarthritis may evolve into polyarthritis.³⁰ Our finding also revealed that more than

half of PsA subjects have combinations of joint involvement features.

Interestingly, we found that four cases had radiographic abnormalities without clinical criteria for PsA. Radiological assessment gives additional information not gained from clinical assessment alone. Asymptomatic involvement of several musculoskeletal structures in patients with 'occult PsA' was reported since the 1970s, but the prevalence are unknown.³¹ The silent features of PsA were identified by means of different imaging techniques including radiography, ultrasound, magnetic resonance imaging and scintigraphy. But the routine investigations of subclinical lesion are not possible in every psoriasis patient because of the large target populations. Fortunately, recent studies suggest that some serum biomarkers, such as serum interleukin 6, highly sensitive C-reactive protein, osteoprotegerin and matrix metalloproteinase 3, can be useful to distinguish patients with arthritis from those who do not.³²

We observed that after the evaluation, 14 new cases of psoriatic arthritis were detected. The high rate of undiagnosed PsA (38.8% of psoriatic arthritis group) emphasizes the key role of dermatologists to screen for arthritis to make an early diagnosis and the need to improve capability to recognize PsA. In addition, dermatologists should pay attention to the joint symptoms and screen with the risk characteristics. The tumor necrosis factor antagonist drugs have been shown to reduce skin and joint symptoms, prevent the

progression of bone destruction and improve quality of life in PsA and psoriasis, even though the cost of this treatment limited its use in developing country. Then early detection and proper management enable the prevention of severe joint deformities.

Limitations of this study include the small sample size, the restriction of a cross-sectional single center study is obvious and further epidemiologic studies in community or multi-academic dermatology centers are required. A larger study and inclusion of patients from multicenter is necessary to acquire national data.

Conclusion

Due to the progressive and debilitating potential of psoriatic arthritis, **dermatologists** need to know PsA **prevalence** and predictors. Cooperative approaches between dermatologists and rheumatologists is a powerful tool for the early diagnosis and management of PsA to avoid many complications commonly associated with this disease.

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