Best Practice & Research Clinical Rheumatology 35 (2021) 101670

Contents lists available at ScienceDirect

Best Practice & Research Clinical Rheumatology

journal homepage: www.elsevierhealth.com/berh

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# Clinical features of psoriatic arthritis

Mitsumasa Kishimoto [a, *], Gautam A. Deshpande [b], Kazuhito Fukuoka [a], Takahisa Kawakami [a], Noriko Ikegaya [a], Soko Kawashima [a], Yoshinori Komagata [a], Shinya Kaname [a]

[a] Department of Nephrology and Rheumatology, Kyorin University School of Medicine, Tokyo, Japan
[b] Juntendo University School of Medicine, Tokyo, Japan

*Keywords:*
Psoriasis
Psoriatic arthritis
Psoriatic disease
Spondyloarthritis
Axial psoriatic arthritis
Comorbidities

A B S T R A C T

Psoriatic arthritis (PsA) is associated with decreased quality of life. As delayed diagnosis may lead to progressive joint destruction and long-term disability, the key clinical features of PsA should be recognizable to a wide range of clinicians to facilitate early diagnosis. In addition to assessment and identification of skin and nail lesions, which occur in up to 85% of those with musculoskeletal manifestations, clinicians should be aware of both the peripheral and axial manifestations of musculoskeletal disease reviewed here. Peripheral joint diseases include polyarticular, oligoarticular, distal, and arthritis mutilans subtypes, and cognizance of these patterns of disease, as well as periarticular manifestations, including dactylitis and enthesitis, is useful for swift diagnosis of PsA. Axial psoriatic arthritis (axial PsA), also known as the spondylitis subtype, may be limited to the spine and sacroiliac joints, but may also affect peripheral structures. Meticulous history-taking and physical examination and familiarity with appropriate imaging studies are often necessary to distinguish axial-PsA from other differential diagnoses. Swift diagnosis and treatment are necessary to both control PsA disease and mitigate the risks of the many associate comorbidities that may accompany it.



* Corresponding author. Department of Nephrology and Rheumatology, Kyorin University School of Medicine, 6-20-2, Shinkawa, Mitaka-shi, Tokyo, 181-0004, Japan.
*E-mail address:* kishimotomi@gmail.com (M. Kishimoto).

https://doi.org/10.1016/j.berh.2021.101670
1521-6942/

## Introduction

Psoriatic arthritis (PsA) is a disease that often strikes young adults at the prime of their productive years and is associated with decreased quality of life (QOL) [1]. Delayed diagnosis and consequent inability to obtain appropriate treatment leads to worse joint damage and often may result in long-term disability [2]. As the diagnosis of PsA in daily clinical practice relies on physician judgment to a considerable extent, it is critical that clinicians familiarize themselves with the key clinical features of PsA.

## Psoriasis (skin and nails)

As its name suggests, PsA is most typically associated with psoriasis; PsA has been reported in 10–30% of psoriasis patients [3–5]. Up to 80% of patients with PsA present with psoriasis before developing musculoskeletal symptoms. The most common form of psoriasis in PsA is plaque psoriasis, also known as psoriasis vulgaris, but other forms of psoriasis including pustular psoriasis, guttate psoriasis, nail psoriasis, erythrodermic psoriasis, and inverse psoriasis can also be associated with PsA. Previous studies suggest that nail psoriasis may be identified in more than 85% of patients with PsA [6–9]. Therefore, in rheumatology clinics, assessment and identification of skin or nail lesions in patients with musculoskeletal manifestations are a top priority in order to make an early and accurate diagnosis of PsA. In the clinical setting, it is difficult to overlook clinically significant psoriasis lesions on trunk or extremities; however, psoriasis on the scalp (Fig. 1), intergluteal or umbilical areas (Fig. 2), mild psoriatic changes on extensor surfaces of the elbows or knees (Fig. 3), or nail lesions (Fig. 4) are often overlooked by both patients and providers. In fact, among patients with psoriasis, scalp lesions (hazard ratio [HR] 3.89, 95% CI 2.18–6.94), nail dystrophy (HR 2.93, 95% CI 1.68–5.12), and intergluteal/perianal lesions (HR 2.35, 95% CI 1.32–4.19) have all been reported to confer substantial risk for the subsequent development of psoriatic arthritis [10]. It is therefore somewhat unsurprising that approximately 15% of patients with PsA have psoriatic skin lesions identified on physical examination, even in the absence of a known history of psoriasis [4].

## Musculoskeletal features

Musculoskeletal features of PsA are categorized into two major types: peripheral and axial manifestations [4,5]. Moll and Wright have previously suggested five subtypes of PsA that highlight the heterogeneity of the disease [11]; subtypes include polyarticular, oligoarticular, distal, arthritis

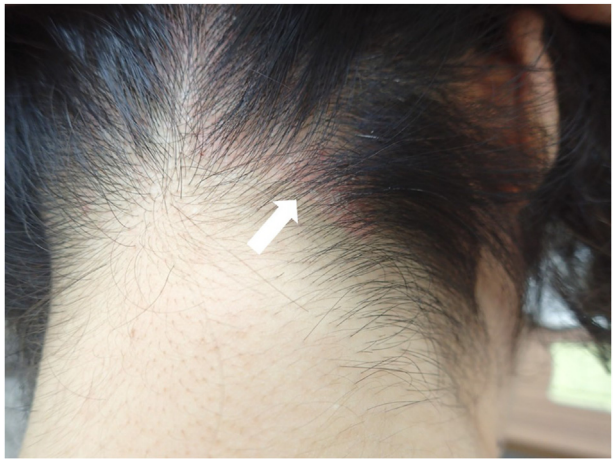

**Fig. 1.** Scalp psoriasis (white arrow).

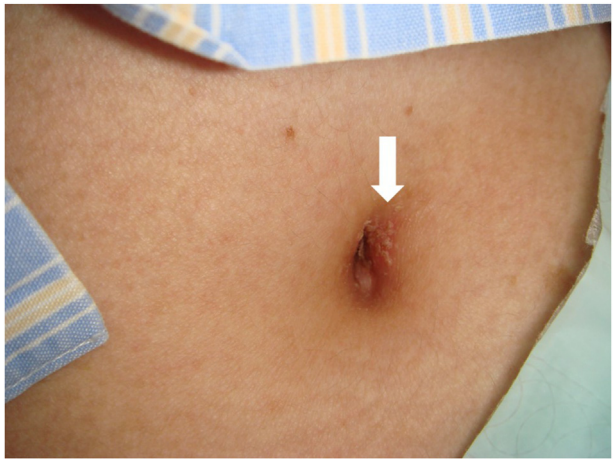

**Fig. 2.** Mild plaque in umbilical area (white arrow).

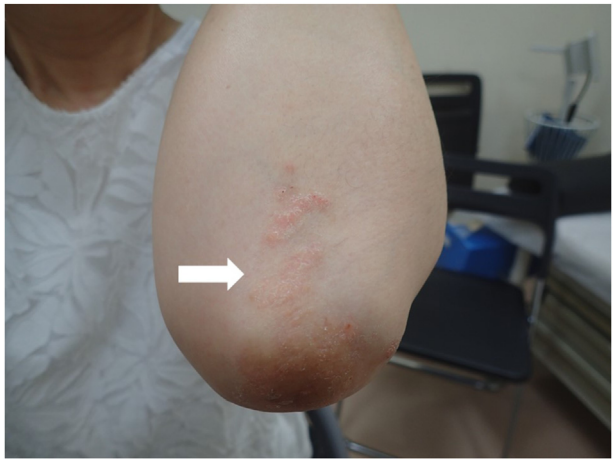

**Fig. 3.** Mild plaque on the extensor surface of left elbow (white arrow).

mutilans, and axial or spondyloarthritis. These patterns may change and overlap during the course of the disease.

*Peripheral manifestations*

Peripheral manifestations include peripheral arthritis, and periarticular manifestations include dactylitis and enthesitis.

The distal subtype affects distal interphalangeal joints (DIP) and often affects interphalangeal joints of the hands and/or feet, specifically portions of the fingers and toes closest to the nails. Nail changes are especially frequent with this subtype of PsA. The oligoarticular subtype affects $\leq$4 joints and typically occurs in an asymmetric distribution. The polyarticular subtype affects $\geq$5 joints, involvement of which may be symmetric and resemble rheumatoid arthritis (RA) (Fig. 5). Arthritis mutilans, a particularly destructive subtype of PsA associated with telescoping digits, bone destruction, and deformity, is the most severe and least common type of PsA, occurring in less than 5% of patients, and is

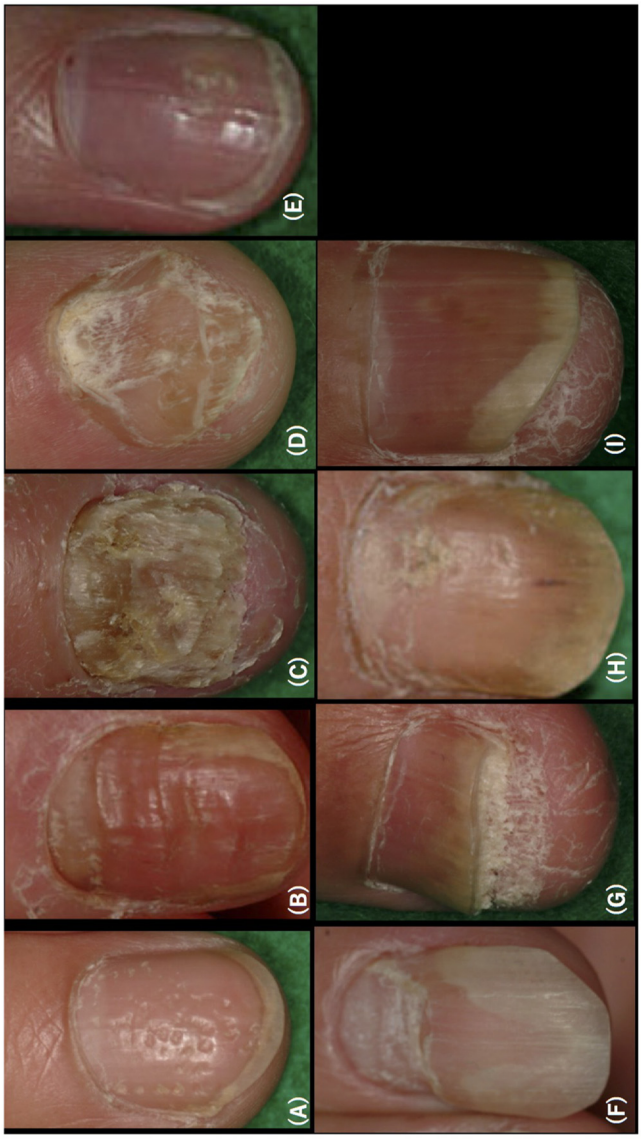


**Fig. 4.** Nail lesions in psoriasis.

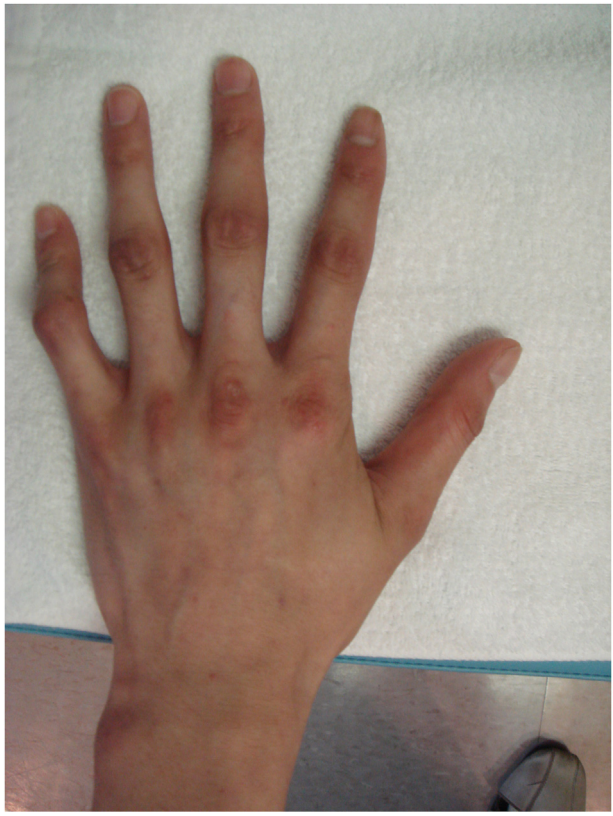

**Fig. 5.** Peripheral arthritis (polyarthritis subtype, involving DIP joints).

typically associated with profound functional disability. Other joint characteristics unique to PsA include: ray pattern distribution, involving all joints within a particular digit; asymmetric arthritis, more likely to affect joints of the same digit rather than the respective contralateral joint; and erosion together with bone formation seen on plain X-ray, occurring in the same limb and same digit.

Other forms of peripheral disease include enthesitis and dactylitis. Enthesitis is seen in 30–50% of patients and most commonly involves plantar fascia and Achilles' tendon insertion sites (Fig. 6), but may cause pain elsewhere, including around the patella, iliac crest, epicondyles, and supraspinatus insertions [12]. Dactylitis, characterized by diffuse swelling of an entire finger or toe, often termed a "sausage digit," represents a relatively uniform swelling of the soft tissues between metacarpophalangeal and interphalangeal joints (Fig. 7) and is observed in 40–50% of patients [13]. Dactylitis is often seen in the polyarthritis subtype and only present on the feet in two-thirds of patients. As previous studies have reported an association with severe manifestations [14], close examination of the lower limbs after removal of socks is critical to identification of these features.

*Axial manifestations*

Psoriatic arthritis shares genetic and clinical features with other forms of spondyloarthritis (SpA) and is grouped with these disorders [4]. The axial type (axial PsA), sometimes also referred to as the spondylitis subtype, primarily involves the spine and sacroiliac joints, with inflammation occurring between the vertebrae. Joints in the arms, legs, hands, and feet may also be involved. Axial involvement occurs in 25–70% of patients with PsA, with exclusive axial involvement in 5% of patients [15]. A study

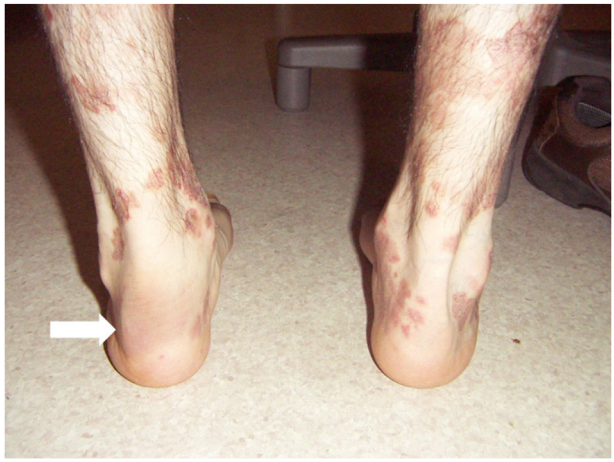

**Fig. 6.** Achilles enthesitis (white arrow).

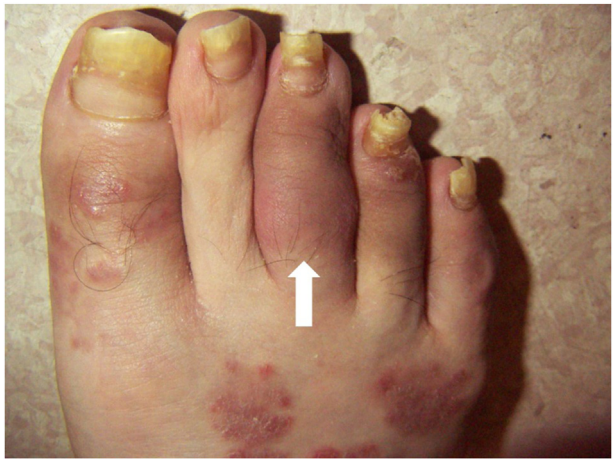

**Fig. 7.** Dactylitis in the third toe (white arrow).

from the US CORRONA PsA/SpA Registry comparing PsA patients with and without axial involvement found no significant gender differences in patients with axial involvement [16]. Although axial PsA is usually less severe than ankylosing spondylitis (AS), axial PsA has a significant impact on QOL and is associated with worse disease than in patients without axial involvement. Another recent report showed similarities and differences between axial PsA and AS; while disease activity, metrology, and disability were comparable in axial PsA and AS, a significant proportion of axial PsA cases had spondylitis without sacroiliitis (39/118; 33.05%) and they less frequently carried HLA-B*27 (OR 0.11; 95% CI 0.04 to 0.33). In contrast, sacroiliac joint complete ankylosis (OR 2.96; 95% CI 1.42 to 6.15) and bridging syndesmophytes (OR 2.78; 95% CI 1.49 to 5.18) were more likely in AS than axial PsA. Thus, radiographic axial disease was more severe in AS than axial PsA [17].

Symptoms of the spondylitis subtype involve pain and stiffness in the back or neck. Patients may experience pain in the cervical spine, thoracic spine, lumbar spine, and sacroiliac area. As mechanical back pain is not an uncommon complaint in the general population, careful history-taking regarding inflammatory features (pain that improves with activity but worsens with rest, nocturnal pain,

morning stiffness lasting >30 min, pain duration>3 months) may differentiate axial PsA from other causes [18,19]. However, criteria for inflammatory back pain developed for axial SpA may not perform well when ascertaining axial PsA [20]. Moreover, a large proportion of PsA patients may have asymptomatic axial disease. In the Chinese population, Leung et al. reported that up to 45% of PsA with axial involvement was asymptomatic, with the condition detectable only via radiographical examination [21].

Although screening tools may be helpful, they are not specific for axial PsA and may help increase awareness among dermatologists and primary practitioners of the clinical features of PsA. Several simple screening questionnaires have been developed to potentially aid nonrheumatologists in identifying patients with PsA. Gottlieb et al. have recently proposed using the mnemonic **PSA** (for joint **P**ain, Swelling, Stiffness after a period of inactivity, **S**ausage digit [dactylitis], **A**xial involvement) before a formal screening [15]. The presence of 2 of these features suggests PsA, with stiffness and axial involvement further suggesting axial PsA. Positive assessment warrants formal screening and/or referral to a rheumatologist.

The diagnosis of axial PsA is confirmed by symptoms, physical examination, and imaging (e.g., sacroiliitis, spinal ossifications) [15]. Among patients with axial PsA, cervical spinal mobility and lateral flexion significantly decrease within 5 years if untreated. Additionally, sacroiliitis worsens with time; 37% and 52% of patients will develop grade 2 or higher sacroiliitis within 5 and 10 years, respectively. Therefore, early identification and treatment of patients with axial PsA is critical [22].

Imaging is an important part of the diagnostic toolset for axial PsA. Radiographic features such as bilateral asymmetric involvement of sacroiliac joints and nonmarginal/asymmetrical syndesmophytes (by using a >45°-angle cutoff on lateral views), paravertebral ossification in the spine, and frequent involvement of the cervical spine may be an indicative of axial PsA and can help to differentiate axial PsA from AS. Of note, an important clinical and radiological issue raised in the last several years is the possible coincidence of diffuse idiopathic skeletal hyperostosis (DISH) [23,24] characterized by the presence of at least three bony bridges at the anterolateral spine opposite to the aorta. Since diabetes mellitus, hypertension, obesity, male gender, and older age are risk factors for DISH [25], some of which are shared with PsA, the coexistence of DISH and axial PsA is possible in some patients [24].

An agreed-upon definition of axial PsA has not yet been fully established [26]. Criteria proposed for recognition of axial PsA vary from the Classification Criteria for Psoriatic Arthritis (CASPAR) criteria plus subjective patient reported outcomes (spinal pain visual analogue scale, inflammatory back pain, etc.) to objective measures such as isolated unilateral grade 2 sacroiliitis and AS criteria. The Assessment of SpondyloArthritis international Society (ASAS) classification criteria for axial SpA also list psoriasis as a clinical feature. As a result of this broad spectrum of proposed criteria, estimates of prevalence of axial PsA still vary widely [15]. To better understand the salient differences between axial SpA and axial PsA, the Axial Involvement in PsA Project, a collaborative effort between Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA) and ASAS, is currently underway.

*Differential diagnosis of arthritis*

Differentiating PsA from other arthritic conditions such as RA, gouty arthritis, and osteoarthritis is essential to the swift and accurate diagnosis of PsA [4]. Manifestations that can distinguish PsA from these competing diseases are summarized in Table 1. Distribution of involved joints at onset, number of affected joints, site of hand and foot involvement, and presence of spinal involvement are all factors that can assist with differentiating PsA from RA. The precise localization of digit joint involvement, as well as purplish discoloration of the skin overlying the inflamed joint is unique to PsA. Osteoarthritis may also involve peripheral joint and spine in a pattern similar to PsA, but the involvement is less inflammatory, compared to that observed in PsA.

## Extra-musculoskeletal/skin manifestations

Falling on the SpA spectrum, PsA is similarly associated with a variety of extra-musculoskeletal immune-mediated manifestations including uveitis and inflammatory bowel disease (IBD). In addition, studies have shown that patients with “psoriatic disease” also suffer from similar associated

**Table 1**
Differential diagnosis of psoriatic arthritis.

| Variables | Psoriatic Arthritis | Rheumatoid Arthritis | Gouty arthritis | Osteoarthritis |
|---|---|---|---|---|
| **Demographic characteristics** | Male = Female; Onset: middle age; Presence of psoriasis and/or nail psoriasis | Female predominant; Onset: 30–40s | Male predominant; Onset: Adult; Metabolic syndrome, obesity | Female predominant; Onset: >50s |
| **Joint distribution at onset** | Asymmetric | Symmetric | Asymmetric | Asymmetric |
| **No. of affected joints** | Oligoarticular | Polyarticular | Monoarticular or oligoarticular | Monoarticular or oligoarticular |
| **Sites of hands and feet involved** | Distal | Proximal | Distal | Distal |
| **Manifestations on plain X-ray** | Productive[a] marginal erosion; mouse ear sign; pencil-in cup deformity | Nonproductive marginal erosion | Overhanging edge | Gull-wing appearance |
| **Areas involved** | All joints of a digit (ray distribution) | Same joint across digits | Usually monoarticular | Same joints across digits |
| **Purplish discoloration of overlying skin** | Yes | No | Yes | No |
| **Spinal involvement** | Common | Uncommon (atlanto-axial subluxation) | Absent | Noninflammatory |
| **Sacroiliitis** | Common | Absent | Absent | Absent |

NA: not assessed.
[a] "Productive" = Juxta-articular new bone formation.

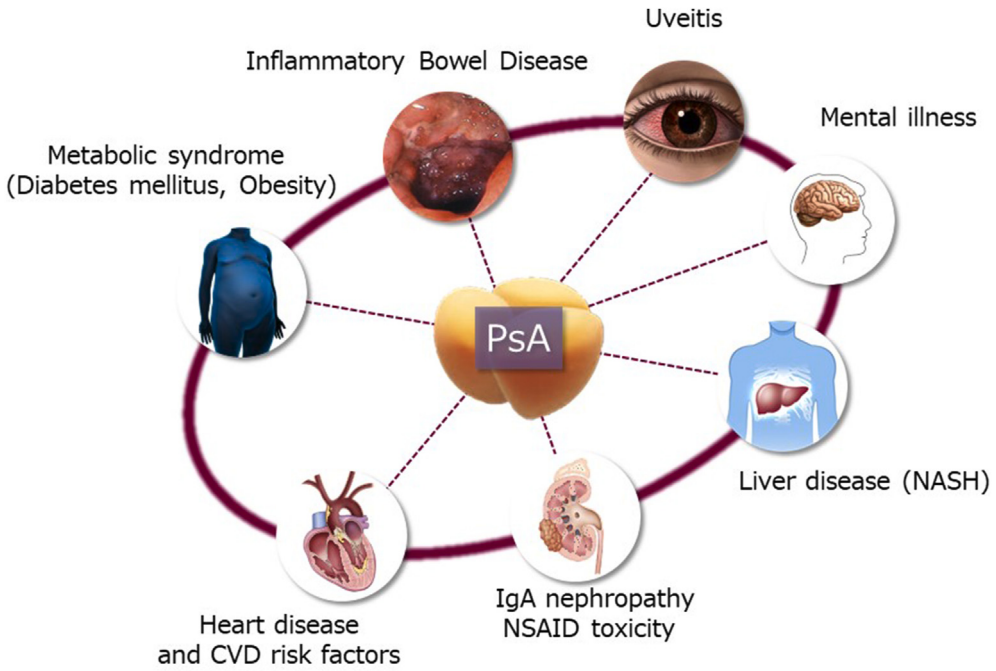


**Fig. 8.** Psoriatic disease spectrum.

comorbidities, including cardiovascular disease, obesity and metabolic syndrome, diabetes, osteoporosis, malignancy, steatohepatosis, depression, and anxiety [4,15,27,28] (Fig. 8). A recent study showed that incident rate ratios for incident anterior uveitis and IBD were significantly increased in AS (IRR 20.2 and 6.2, respectively) and PsA (IRR 2.5 and 2.3, respectively) compared to controls. Men with AS had a significantly higher risk for incident anterior uveitis than women with AS, whereas no such sex difference was demonstrated in PsA [29]. Furthermore, risk of developing uveitis and IBD remains higher in patients with PsA compared to those with psoriasis or in the general population [30]. IBD occurs in 11% of patients with axial PsA and is significantly more common in patients with axial involvement than in those with peripheral-only PsA (2%) [17]. Clinician should be aware of these two common extra-articular manifestations in choosing the most appropriate treatment for patients.

Prevalence of oral mucosal lesions is also more common in psoriasis patients than in healthy controls (43% vs. 17%) [31]. In addition, reactive arthritis and PsA may share clinical similarities, and genitourinary manifestations such as urethritis can be observed in PsA patients [32].

## Sex and ethnic differences

A cross-sectional analysis of PsA patients revealed that men with PsA are more likely to develop axial involvement and radiographic joint damage, while women are more likely to report limitation in function and impaired QOL [33]. Few studies concerning ethnic differences in disease expression in PsA exist. Recent studies have reported that Asian patients have a higher risk of progression from psoriasis to psoriatic arthritis, as well as a higher prevalence of relevant family history, enthesitis, and worse disease activity [34,35]. Further studies are needed to confirm these findings and elucidate the reasons behind these differences.

## Summary

Delayed diagnosis and treatment of PsA lead to worse joint damage and often long-term disability. As the early diagnosis of PsA in daily clinical practice relies considerably on physician judgment, it is important that clinicians familiarize themselves with the key clinical features of PsA.

**Practice points**

- Up to 80% of patients with PsA present with psoriasis, including on the scalp and intergluteal regions, before developing musculoskeletal symptoms, and up to 85% have nail alterations.
- Peripheral manifestations of PsA include peripheral arthritis, as well as periarticular manifestations such as dactylitis and enthesitis.
- Axial manifestations of PsA may include a wide range of spinal regions, and most patients have peripheral joint involvement. As QOL is disproportionately affected in those with axial disease, swift diagnosis and referral using available screening tools may be helpful.
- PsA is associated with numerous extra-articular/skin and comorbid conditions.

**Research agenda**

- Better understanding of the difference between axial SpA and axial PsA is warranted.
- The lack of a widely accepted definition of axial PsA needs to be addressed.
- A better understanding of the association and mechanism underlying articular, extra-articular manifestations, and comorbidities such as cardiovascular disease, metabolic syndrome, and depression is needed to ameliorate the global burden of disease.

## Funding

The authors received no specific funding for this work.

## Declaration of competing interest

MK: consulting fees and/or honoraria from AbbVie, Amgen-Astellas BioPharma, Asahi-Kasei Pharma, Astellas, Ayumi Pharma, BMS, Chugai, Daiichi-Sankyo, Eisai, Eli Lilly, Gilead, Janssen, Kyowa Kirin, Novartis, Ono Pharma, Pfizer, Tanabe-Mitsubishi, Teijin Pharma, and UCB Pharma.

GD, KF, TK, NI, SK, YK, and SK: No conflict of interest.

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