Chapter 2

Clinical Presentation of Psoriasis

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Additional information is available at the end of the chapter

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1. Introduction

Psoriasis, a chronic papulosquamous inflammatory skin disease, was originally thought of as a primary disorder of epidermal keratinocytes, but is later on recognized as one of the commonest immune-mediated disorders [1, 2]. Although psoriasis starts with the involvement of skin, but limiting this disease to a skin problem is rather a restrictive approach. Psoriasis has been linked to a number of other diseases especially metabolic derangements and arthritis [3-5]. The disease imparts a huge socio-economic burden [6, 7] and the diagnosis of psoriasis is purely based on clinical features. Depending upon the type of psoriasis, onset may be abrupt or slowly progressive. Although it may appear at any age, but majority of patients experience the first episode before the age of 40 years and is uncommon before 10 years [8]. The population based study at Mayo Clinic, suggest that psoriasis tends to appear at an earlier age in females compared to males [9]. A study by Henseler et al. suggested that many psoriatic patients show bimodal distribution i.e. peak between 16-22 years and later between 57-60 years [2, 10].

2. Epidemiology of psoriasis

Psoriasis shows a worldwide prevalence. The estimate of prevalence psoriasis varies among different ethnic groups and also by geographical location, more common in colder northern zone compared to tropical zone and has been reported to vary in between 0 to 11.8% [11, 12]. Several confounding factors need to be taken into consideration for analyzing the prevalence data of psoriasis namely: method of ascertainment (population based, clinic based, questionnaire based), age and type of prevalence estimated (point, period, lifetime) [8, 13]. Taking into consideration of the confounding factors, the prevalence of psoriasis is highest in northern Europeans and almost absent in aboriginal population of south America [11]. In United States, the prevalence of psoriasis ranges between 2.2% to 2.6% and is lower in African-american

compared to Caucasians. The prevalence rate of psoriasis in China and Japan is low than European ethnicity and in India it ranges between 0.5% to 2.3% [8, 13-15].

3. Latent, minimal and overt psoriasis

The course of the disease in the same individual is not uniform over time. It may range from apparently healthy to minor signs to overt clinical manifestations. No diagnostic test is available to predict future psoriasis development, that's why the diagnosis of "latent psoriasis" in individuals without a previous history of the disease remains impossible. On the other hand, the diagnosis of "minimal psoriasis" largely depends on subjective variation due to lack of validated criteria. The minor signs of psoriasis, which are also known as 'stigmata of psoriasis' are described in Table 1, but their contribution to overt psoriasis remains unknown.

Hyperkeratotic plaques on the exterior surface without scaling
Keratolysis like lesions of the palms and soles
Eczematous patches on palms and soles
Severe dandruff
Nail pitting
Sterile multiple paronychia
Subungual hyperkeratosis and onycholysis without fungal infection
Recalcitrant scaly otitis externa
Intertrigo with sharp marginated erythema
Sharply marginated penile erythema without fungal infection

Table 1. Stigmata of psoriasis [16]

4. Classifying psoriasis: The clinical spectrum

Psoriasis is a disease of coexisting signs and symptoms characterized by scaly, erythematous lesions with sharply demarcated margins. It's interesting to note that scaling prevails in the stable chronic plaque stage of psoriasis and erythema predominates in the unstable progressing lesions of guttate psoriasis. The lesions are itchy and bleed easily. One of the classical sign of psoriasis is the 'Auspitz' sign, characterized by pinpoint bleeding when outer scales are removed from psoriatic plaques. Psoriasis cannot be classified based on a single factor and generally involves differentiation of lesions based on: a. morphology of the lesions, b. degree of inflammation, c. distributing patterns of the lesions, d. extent of body surface involvement, e. first onset and f. velocity of propagation [17].

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4.1. Chronic plaque psoriasis

This is the commonest form of psoriasis, represents 70-80% of psoriatic patients and is also known as Psoriasis vulgaris. The patient presented with sharply demarcated round-oval, or nummular (coin-sized) plaques with a loosely adherent silvery white scale, specially affecting the elbows, knees, lumbosacral areal, intergluteal cleft and scalp (Figure 1 & 2). The lesions usually begin as erythematous macules or papules, extend peripherally, and coalesce to form plaques. Woronoff's ring, a white blanching ring may be observed in the skin surrounding a psoriatic plaque [18, 19]. The gradual peripheral extension of the plaques resulting in different configurations including:

a. psoriasis gyrate: predominantly curved linear pattern

b. annular psoriasis: ring like lesions develop secondary to central clearing

c. psoriasis follicularis: presence of tiny scaly papules at the openings of pilosebaceous follicles

Occasionally, presence of lesions on the scalp and face makes it difficult to separate this variety from seborrheic dermatitis (sebopsoriasis). There are two distinct morphological subtypes of plaque psoriasis: Rupioid and Ostraceous. Rupioid plaques resembles limpet shells, small (2-5 cm in diameter) and highly hyperkeratotic. Ostraceous psoriasis is characterized by hyperkeratotic plaques, relatively concave centres, resembles oyster shells. Scale is typically present in psoriasis, is characteristically silvery white, and can vary in thickness. Removal of scale may reveal tiny bleeding points (Auspitz sign). The amount of scaling varies among patients and even at different sites on a given patient. Apart from its usual presentation, chronic plaque psoriasis sometimes affecting the flexures such as inframammary, axillary and perineal region known as *inverse psoriasis*. Inverse psoriatic lesions have minimal or no scales and appear as red, shiny, well demarcated plaques and may be confused with candidal, intertrigo, and dermatophyte infections.

The lesions are steady over time and as they regress, they start with central clearing with a peripheral activity margin which produces an annular or polycyclic appearance of the lesions. Central clearing is sometimes associated with hypopigmentation. Although the lesions are benign but may be complicated by appearance of inflammation with pustules and peripheral extension of the lesions.

4.2. Guttate psoriasis

Guttate psoriasis came from the Greek word 'gutta', which means droplet. Guttate psoriasis accounts for 2% of the total psoriasis [19]. This variety is distinguished by its acute onset of round erythematous exanthem (2-10 mm diameter) over the trunk and extremities in a centripetal fashion. The number of lesions may vary from 5 to more than 100 (Figure 3). Although the disease has a self limiting course, but a certain percentage of individuals may evolve to chronic plaque psoriasis. It is often reported that about 10% of psoriatic patients with the chronic plaque psoriasis have flares of guttate lesions during the course of their disease [18]. Guttate psoriasis commonly affect children or young adults with family history of

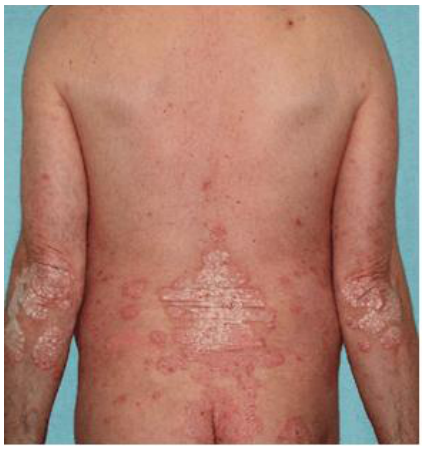

Figure 1. Localized plaque psoriasis

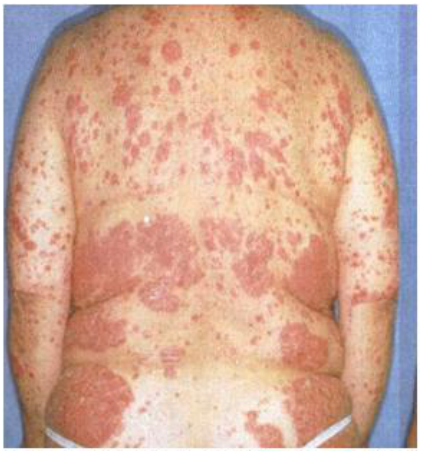

Figure 2. Generalized plaque psoriasis

psoriasis and may follow streptococcal infection and/or acute stressful life events [20]. It is estimated that there is a 40% increased risk of developing chronic psoriasis after a bout of guttate variety [21]. It's quite interesting to note that chronic plaque psoriasis and guttate psoriasis appear to be genetically similar with a strong association to the *PSORS1* genetic locus, which is also a major determinant of Psoriasis vulgaris [22, 23].

4.3. Generalized pustular psoriasis (von Zumbusch)

Generalized pustular psoriasis is rare and represents active, unstable disease. Population survey reports that almost 20% of patients have pustular lesions superimposed on lesions of

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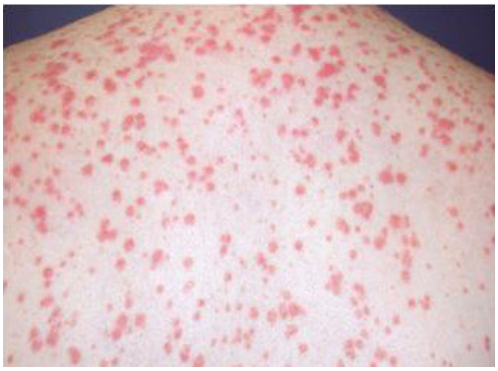

Figure 3. Guttate psoriasis

chronic plaque psoriasis at any time during the course of the disease [16]. However, only 2-5% of psoriatic patients have predominant pustular variety, having only pustules dominating the clinical picture [24]. Acute generalized pustular psoriasis generally develops after an irritant topical treatment of plaque psoriasis or due to abrupt corticosteroid withdrawal [25, 26]. Onset of an acute generalized pustular psoriasis is characterized by red and tender skin with systemic symptoms like fever, anorexia and nausea. Within hours, innumerable pustules appear with an erythematous background. Later on pustules become confluent creating ponds of pus with severe systemic symptoms. Consequently, the pustules dry and skin exfoliates producing a glazed erythematous surface where new crops of pustules might appear. There may be geographic tongue, polyarthritis and cholestasis associated with generalized pustular psoriasis [27]. Patients with generalized pustular psoriasis often need hospitalization for management. With remission of acute episodes, patient either follows an erythrodermic state or may produce plaque like lesions. Rarely, pustular psoriasis may appear during first six months of pregnancy, being called *impetigo herpetiformis* [28].

4.4. Localized pustular psoriasis

Localized pustular psoriasis includes two clinicaly distinct varieties: acrodermatitis continua of Hallopeau and palmoplantar pustulosis.

Acrodermatitis continua (*dermatitis repens)*: A rare pustular eruption of the fingers and toes initiated after a localized trauma starting at the tip of a single digit [29]. Subsequently, the pustules become confluent and may spread proximally to involve the dorsal aspects of the hands, forearms and feet. Eventually, patients may develop osteolysis of the distal phalanx and associated onychodystrophy and anonychia of the involved digits. Sometimes the pustules become generalized.

Palmoplantar pustulosis: The characterizing feature of this variety is hyperkeratosis and clusters of sterile, yellow pustules on a background of erythema and scaling, affecting the ventral aspect of palms and/or soles. The pustules are tender and form dark brown color with adherent scales or crust. It is frequently associated with psoriatic nail involvement. In almost 25% cases, it is

associated with psoriasis vulgaris, but it is now believed that palmoplantar pustulosis may not be a form of psoriasis due to lack of genetic association with PSORS1 locus. Moreover, it is predominant in women and is strongly associated with smoking [23, 30]. This disease has been associated with pustulotic arthroosteitis involving the anterior chest wall, sacroiliitis, and peripheral synovitis [31, 32]. Palmoplantar pustulosis is also an element of SAPHO syndrome, characterized by synovitis, acne, pustulosis, hyperostosis, and osteitis [33].

4.5. Erythrodermic psoriasis

Psoriatic erythroderma is characterized by extensive involvement of the skin by active psoriasis and represents in one of the two forms (Figure 4). In one form, chronic plaque psoriasis gradually progress and involve extensive body surface. In the second form which is more serious, erythroderma is a manifestation of unstable psoriasis, which is precipitated by triggers such as infection, tar, drugs and withdrawal of corticosteroids. This unstable form of psoriasis is characterize by prominent erythema and loss of characteristic clinical features of psoriasis [34]. Erythroderma impairs the thermoregulatory capacity of the skin resulting in hypothermia, high output cardiac failure, and metabolic changes, which needs immediate inpatient care.

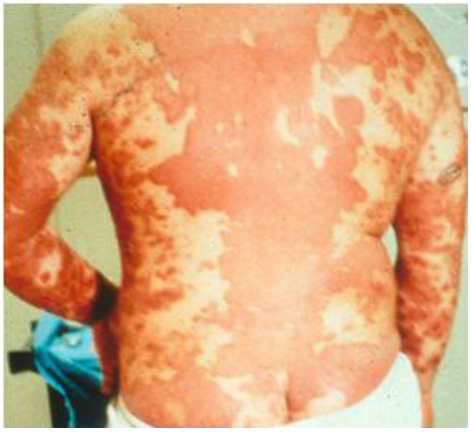

Figure 4. Erythrodermic psoriasis

4.6. Psoriatic nail disease

In psoriasis, finger nails are more commonly affected than toe nails. 'Pitting of nail' i.e. small pits in the nail plate are the commonest finding, resulting from defective nail formation in the proximal portion of the nail matrix. In addition, the nail may detach from the nail bed known as onycholysis and 'oil-spots' i.e. orange-yellow areas can be seen beneath the nail plate (Figure 5). Moreover, the nail plate may become, thickened, dystrophic, discolored and yellow, keratinous material may collect under the nail plate, which is known as subungual hyperker-

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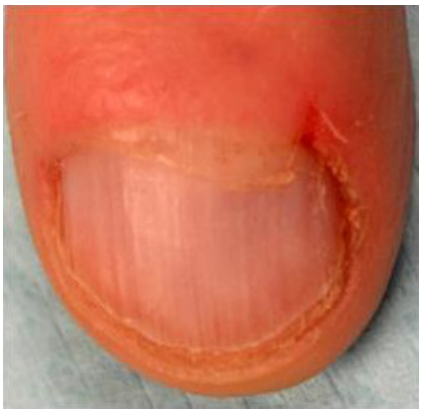

Figure 5. Nail changes

atosis. In most psoriatic patients, minor nail changes are observed and major nail abnormalities are usually associated with psoriatic arthritis and scalp involvement [19, 35].

5. Extension of the psoriatic spectrum beyond skin

Psoriasis is a systemic, chronic inflammatory disorder, occuring due to complex interplay of genetic, environmental and immunologic factors, predominantly affecting skin but can involve any organ systems of the body. Epidemiological studies in Caucasian and Asian populations show that patients with psoriasis suffer from other chronic inflammatory conditions with overlapping pathology, such as rheumatoid arthritis and inflammatory bowel disease, more frequently than patients without psoriasis [36, 37].

Psoriatic arthritis is a chronic inflammatory arthritis affecting about 5–25% of patients with psoriasis. The prevalence varies from 20–420 per 100,000 population across the world except in Japan where it is 1 per 100,000 [38]. Psoriatic arthritis has been defined as "an inflammatory arthritis occurring during the course of psoriasis and characterized by negative rheumatoid factor" [5]. Although arthritis typically occurs in fourth and fifth decade, no age is exempted with cases involving young children and elderly. There is no gender bias and both sexes are affected with a male to female ratio varying from 0.7:1 to 2.1:1. In majority of the patients (49–75%), arthritis follows chronic psoriasis of about 7–12 years duration. This follows onset of skin and joint disease in 10–37% patients simultaneously and lastly it can precede psoriasis in 6–18% [39-46]. Psoriatic arthritis is most commonly associated with psoriasis vulgaris. Conventionally, psoriatic arthritis can affect both the peripheral joints as well as the axial skeleton; thus, the joint involvement has been grouped into different subtypes. The original Moll and Wright classification criteria divided psoriatic arthritis into five subtypes: distal interphalangeal (DIP) predominant, symmetrical polyarthritis, single or few fingers or toe

joints involved (asymmetrical oligoarthritis and monoarthritis), predominant spondylitis, and arthritis mutilans [47].

Psoriasis can be associated with a range of co-morbidities that include metabolic diseases, such as diabetes and cardiovascular (CV) diseases, tumors of specific sites, such as, lung cancer, colon cancer, and kidney cancer [48] and psychological disorders such as depression [49-55]. These comorbidities might influence patients' health and quality of life (QoL), and contribute to the 3 to 4 year reduction in life expectancy in patients of severe psoriasis [56]. There have been associations of psoriasis with smoking and increased body mass index [4, 57], which may influence clinical severity and prognosis. Established psoriasis has been associated with the several components of the metabolic syndrome, including hypertension, dyslipidemia, obesity, and impaired glucose tolerance [3, 49, 58]. It has been reported that suppression of the inflammatory process may reduce the cardiovascular risk in patients with psoriasis and rheumatoid arthritis [59, 60].

6. Grading the severity

Psoriasis, unlike many chronic disorders, does not emerge steadily toward a definite outcome, and therefore it is difficult to do staging of the disease by natural history [61]. Simple outcome measures like clinical remission, number of hospital admissions or ambulatory consultations and major disease flare-ups may affect disease severity. Measurement of disease severity only based on assessing skin area involvement at a point of time, has large limitations as it does not provide any direct information on the disease in terms of psychologic or social consequences. Moreover, differences between different pattern distributions or clinical subgroups in psoriasis except chronic plaque psoriasis, are inadequately addressed by these indices. The example for such measures is the Psoriasis Area and Severity Index (PASI), which was developed as an outcome measure in clinical trials on oral retinoids in 1978 [16, 62].

In this perspective, Quality of life (Qol) measures have the advantage of considering the multidimensional nature of disease assessment and outcome, which generally includes evaluation of disease related discomfort, level of disability and social disruption. However there is a limitation of their confirmation against a gold standard and the characterization of severity thresholds. Their use in clinical studies is still very limited. Qol refers to quantitative estimates acquired through standardized questionnaires exploring the relevant dimensions of the patient's life in terms of physical, social, and psychologic well being, that may be affected by the disease [63, 64]. Among the instruments designed for specifically assessing psoriasis are the Psoriasis Disability Index [65] and the Psoriasis Life Stress Inventory [66].

European Medicines Agency developed a set of criterion based on clinical features of psoriasis, involving a change in disease management from no treatment to topical and systemic modalities. These criterions are based on certain definitions which were developed to standardize assessment in randomized clinical trials. The definitions take into account; degree of skin involvement and patient's opinion as for example 1) Minimal disease with few isolated lesions and disease in remission with no psoriatic lesions, 2) Mild disease with PASI<10% and well

controlled with topical treatment, 3) Moderate disease with PASI>10% and can be treated topically, 4) Moderate to severe disease with PASI>10% and failure of topical therapy or PASI<10% with disabling lesions in face, hands and feet, 4) Severe disease with PASI>20% or PASI>10% and <20% with disabling lesions in face, hands and feet and 5) Psoraisis with guarded prognosis including Generalized pustular psoriasis and psoriatic erythroderma [67]. A careful distinction between severe diseases versus disease affecting Qol severely has relevant implications in disease management. Studies report that patients with mild psoriasis having a severe impact on Qol can benefit from psychologic support than systemic drugs to suppress disease activity [62].

7. Disease prognosis

Due to its chronicity and incurability, psoriasis has a comparatively higher prevalence in the general population. Generally, with age, the point prevalence and the lifetime prevalence is anticipated to increase but in many studies it was shown that prevalence does not increase or even diminish with age [17]. This may be due to increased mortality among psoriatic patients later in life as compared to general population. Association with smoking and other comorbidities might contribute to such a drift [68]. It has also been reported that Qol indices might decline in long run independent of treatment [69]. Moreover, the progression of the skin lesions does not follow a pattern and the extent of skin involvement might range erratically from none to generalized body involvement. However, according to population surveys, most patients experience mild to moderate symptoms [70] and the percentage of patients reporting systemic therapies and/or hospitalization is no more than 20% [18].

The disease course is a bit unpredictable with spontaneous remissions and exacerbations with disease severity increasing in the winter and improving in the summer months. Again, there may be a disease flare up during sun exposure. The prevalence of photosensitive psoriasis according to a cross sectional survey was about 5.5% in patients who have type 1 skin, have a positive family history, in advanced age group and having psoriasis on their hands [71]. Moreover, psoriasis is reported to improve with pregnancy and aggravate during post partum period [72].

8. Differential diagnosis

The papulosquamous diseases which are considered in the differential diagnosis of psoriasis includes tinea infections, pityriasis rosea, and lichen planus. Psoriatic lesions are distinct from these entities being very well circumscribed, circular, red papules or plaques with a grey or silvery-white dry scale. In addition, psoriatic lesions are typically distributed symmetrically on the scalp, elbows, knees, lumbosacral area, and in the body folds. Psoriasis may develop at the site of trauma, known as Koebner's phenomenon.

Acute generalized exanthematic pustulosis, a self limiting febrile drug reaction usually resolving in 2 weeks after withdrawal of the suspected agent must be differentiated from

generalized pustular psoriasis. Acute generalized exanthematic pustulosis is characterized by pinpoint nonfollicular pustules on erythematous patches mainly involving body folds, with single necrotic cells in epidermis, eosinophils and vasculitic changes in the dermis [73, 74].

9. To conclude

Psoriasis is an enigmatic disease involving a complex interplay of genetic, immunological and environmental factors. Advancement of science and technology has led to the identifications of many checkpoints in the disease course and pathology, which quite effectively has led to the development of novel therapeutic targets to limit disease progression. However, despite extensive research ino this disease the exact pathogenesis and clinical course of the disease is still unknown. Thus there is always a need for better diagnostic criteria, severity assessments and disease related Qol measures for determining long term outcomes of this elusive disease.

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