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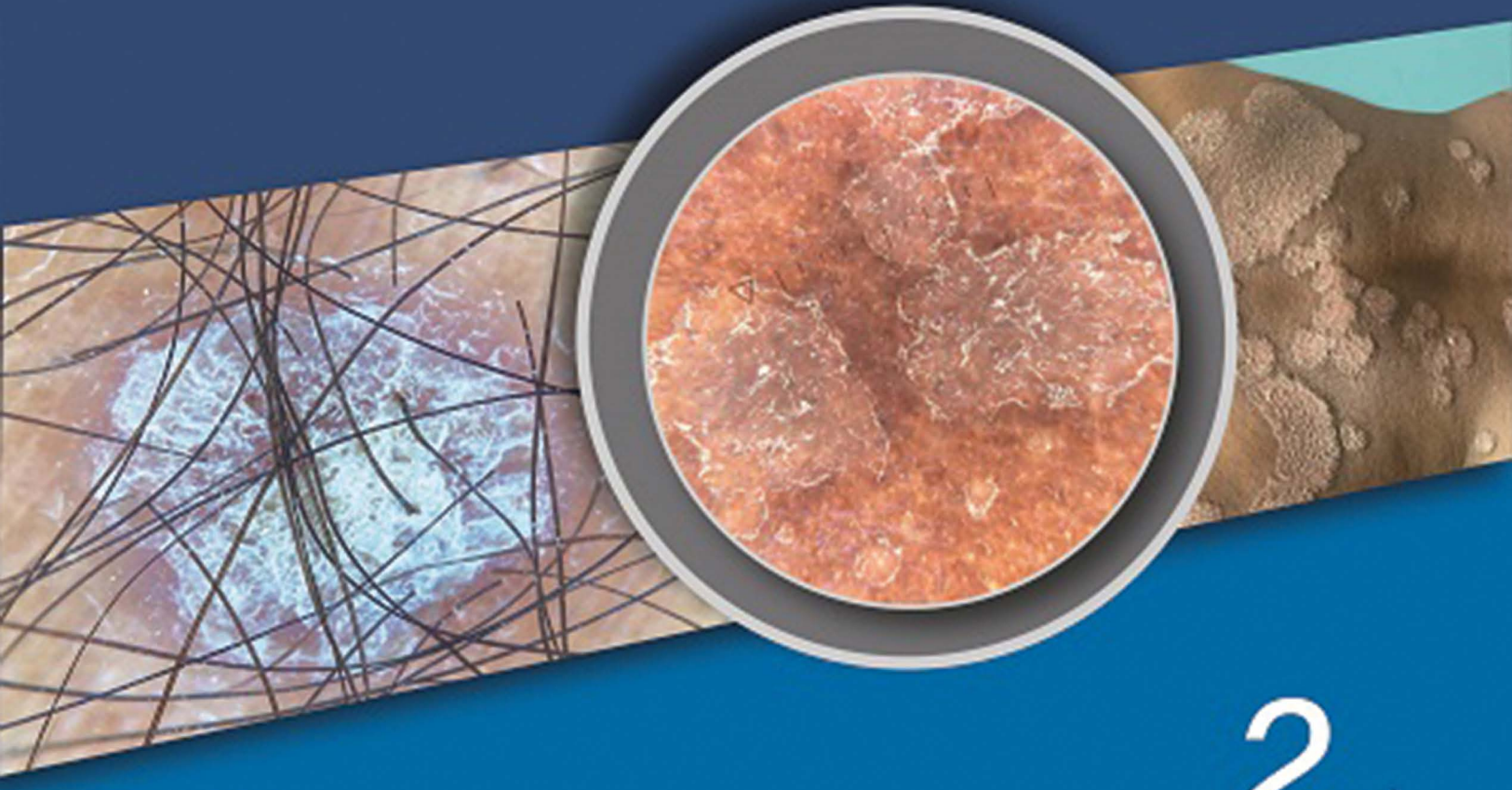
Psoriasis
A Closer Look



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Epidemiology

There is considerable racial variation in the prevalence of psoriasis from country to country which may be attributable to many factors like climate, genetic susceptibility and lifestyle.

Psoriasis occurs worldwide and has no gender preference; however, its prevalence varies considerably. However, according to Basko-Plluska JL and Petronic-Rosic V, the prevalence of psoriasis has not changed with time; according to epidemiological studies, in contrast to other autoimmune diseases whose prevalence rates have increased.[1] In the United States (US), psoriasis affects approximately 2% of the population, although rates as high as 4.6% have been reported.[2,3] Bell et al. showed an age- and sex-adjusted annual incidence of 60.4 in 100,000 for Rochester, MN, between the period of 1980 and 1983.[4] More recently, Huerta et al. reported an incidence rate of 14 per 10,000 person-years.[5] The difference in reported incidence rate can be attributed to the different case definitions used in these studies. Psoriasis is extremely rare to absent in certain ethnic groups such as Africans, African-Americans, Japanese, Alaskans, Australians and Norwegian Lapps.[3,6,7]

According to Kurd SK, Gelfand JM, psoriasis is seen in about 3.5% of the population.[8] One-third of psoriasis cases in a dermatology center are seen in pediatric age-group.[9] In India, the prevalence of psoriasis varies from 0.44 to 2.8%; it is twice more common in males compared to females, and most of the patients are in their third or fourth decade at the time of presentation.[10]

Psoriasis has a bimodal distribution of age of onset. Those individuals with early onset appear, in general, to have more severe disease and are much more likely to have an affected first-degree relative with psoriasis. One-third of adults with psoriasis report onset in childhood. Ethnic variation is not clear, with some studies quoting incidence highest in Caucasians, black then Asian populations.[11] It is alarming to note that 40,000 children under 10 years of age were afflicted by psoriasis.[12] The distribution of psoriasis is almost equal in boys and girls. However, female preponderance has been observed by some authors. The occurrence of psoriatic diaper rash in younger children and its inclusion increases incidence of psoriasis in children under 2 years of age.[11] The exact age distribution is not clear, though literature states that nearly 30% of patients with psoriasis develop the disease before the age of 18 years.[13] It is of interest to note that in the age group <20 years, the frequency of psoriasis was 20% higher in girls than in boys, in contrast to adults.[14] Compared with 37% in adult-onset patients, 49% of pediatric-onset patients had first-degree family members affected with psoriasis. Some studies have reported familial incidence in childhood cases of psoriasis as high as 89%.[15]

According to Basko-Plluska JL and Petronic-Rosic V, psoriasis can first appear at any age; however, a bimodal distribution of the age of onset is characteristic. The majority of cases, approximately 75%, presents before the age of 40 years, with a peak at 20–30 years old. The remaining cases present after the age of 40 years. Patients with early disease onset tend to have a positive family history of psoriasis, frequent association with histocompatibility antigen [human leukocyte antigen (HLA)]-Cw6, and more severe disease. Those with onset after the age of 40 years usually have a negative family history and a normal frequency of the Cw6 allele.[1]

Involvement of joints with psoriatic arthritis is less prevalent in younger patients; however, it does occur in childhood disease and should be considered in the differential of pediatric arthritis.[16] The heritability of psoriasis is as high as 91%, which is supported by many studies, documenting a concordance in incidence of as high as 73% and 20% in monozygotic and dizygotic twins, respectively.[17]

Involvement of multiple genes makes the genetic basis of psoriasis complex, and hence, it is difficult to draw a conclusion about the correct heritability of the disease. The heritability of psoriasis has been estimated to be 60–90%, based on twin studies. Thus making psoriasis a highly heritable disease, the heritability seems to be highest of all multifactorial genetic diseases.[18,19] Concordance rates as high as 70% have been reported among monozygotic twins, versus 12–30% in dizygotic twins.[20] According to family studies, it was shown that if both parents have psoriasis, the offsprings have a 50% chance of developing the disease. The risk decreases to 16%, if only one parent has psoriasis. The siblings of a psoriatic child with unaffected parents have an 8% risk of developing the disease. Males have a higher risk of transmitting psoriasis to offspring than females, which is likely due to genomic imprinting.[21] HLA studies have shown that psoriasis is associated with several

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HLA antigens, most frequently HLA-Cw6, which confers a relative risk of 10 for developing the disease in the Caucasian population. However, only approximately 10% of individuals who express the HLA-Cw6 allele go on to develop psoriasis.[22] In addition, HLA-Cw6 influences the age of onset of the disease. HLA-Cw6 is expressed in about 85–90% of patients with early-onset psoriasis, but in only 15% of patients with late-onset disease.[23]

Human leukocyte antigens-B13, HLA-B17, HLA-B37 and HLA-Bw16 have also been associated with plaque psoriasis. HLA-B27 is expressed with an increased frequency in pustular psoriasis and acrodermatitis continua of Hallopeau. A significant association between guttate psoriasis and erythrodermic psoriasis with HLA-B13 and HLA-B17 expression has been reported.

Protein tyrosine phosphatase N22 (PTPN22) and its association to psoriasis have been extensively analyzed. There seems to be a positive association between psoriasis and the PTPN22, the significance of which is yet to be proved beyond doubt.[24]

Many analytic epidemiologic studies have identified multiple risk factors like smoking, obesity, alcohol consumption, diet, infections, medications, and stressful life events to play an important role in the disease manifestation.

European studies have also confirmed that current smoking and obesity are independent risk factors for developing psoriasis.[25] One of the largest studies estimated that 30% of new psoriasis cases were due to being overweight (body mass index > 25).[26] A higher prevalence of psoriasis has been demonstrated in current smokers than never- or ex-smokers.[27] Many studies suggest that alcohol plays an important role in the exacerbation of psoriasis. It was noted that heavy drinkers have a tendency to develop more extensive and inflamed skin lesions.[28-30]

Infections are known factors to be associated with psoriasis. Acute bacterial and viral infections have been associated with the onset or exacerbation of psoriasis.[31] Streptococcal infections are often triggers of guttate psoriasis, especially in children and young adults.[32] There are reports to show the association of HIV infection and psoriasis. Medications, including beta-blockers, lithium, antimalarials, tetracycline antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs), and steroid withdrawal have been associated with the onset or exacerbation of psoriasis, mostly based in case reports.[33] Antimalarial drugs may exacerbate preexisting psoriasis in up to 40% of patients by inhibiting the enzyme transglutaminase and causing epidermal proliferation.[34] The role of psychological stress has long been attributed in the exacerbation of psoriasis. Acute psychosocial stress was shown to induce altered hypothalamic–pituitary–adrenal (HPA) responses in patients with psoriasis—particularly in those who experienced a flare of disease with stress.[35]

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