



Pityriasis Alba: A narrative review on the epidemiologic features, etiopathogenesis, and management

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Abstract:

The skin condition known as pityriasis alba (PA) is characterized by patches of lighter skin. PA most often affects children and teenagers. These lesions heal and leave behind hypopigmented patches that gradually regain their normal pigmentation. No infectious agent has been found; hence the illness is not spread from person to person. Atopic dermatitis, sun exposure, frequent bathing, hot baths, soaps, and wind, as well as low socioeconomic position and lack of personal cleanliness, all increase the likelihood of developing PA. Some researchers found low blood copper levels with iron deficiency anemia in patients with PA. When a clinical diagnosis is obtained, the skin is cared for, and the parents are educated on the disorder's benign nature. In most cases, PA improves on its own. This narrative review will concentrate on the prevalence, causes, clinical manifestations, and treatments of PA.

Keywords: Pityriasis Alba, Pigmentary disorders, Hypopigmentation.

Introduction:

Pityriasis alba is a skin condition often seen in children and young adults that is characterized by the appearance of erythematous macules and patches that are poorly defined, scaly, and very pale. These lesions fade over time, leaving behind hypopigmented patches that gradually regain their usual coloration⁽¹⁾. Although those with darker skin tones are more likely to recognize symptoms of PA, this condition affects people of all skin tones⁽²⁾. This narrative review will concentrate on the prevalence, causes, clinical manifestations, and treatments of PA.

Epidemiology of PA:

It is unknown how common PA is. However, it may affect as many as 5 percent of kids. Twenty-four percent of instances of hypopigmentary disorders are due to pityriasis alba⁽³⁾. The prevalence varies geographically for several reasons. The frequency of PA was 9.9% among 9955 schoolchildren in Brazil aged 6-16 years old⁽³⁾

In the past, researchers have found prevalence rates of 1.02% in India⁽⁴⁾, 5.1% in Romania⁽⁵⁾, 5.2% in Nepal⁽⁶⁾, 9.9% in Brazil⁽⁷⁾, 10.5% in Libya⁽⁸⁾, and 17.3% in Saudi Arabia [9]. The incidence

nance of PA was found to be 13.49% in prior community-based research conducted in rural parts of Upper Egypt⁽¹⁰⁾. In Ismailia City, Egypt, 10.3 percent of primary school students have PA⁽¹¹⁾. Survey of a primary school in the Egyptian community of Dakahlia shows a frequency of 19.8 percent⁽¹²⁾. A cross-sectional study of 185 children from two schools was conducted in Egypt. The prevalence of hypopigmentation in the examined population was 45.4%, with pityriasis alba accounting for 58.3%, pityriasis versicolor accounting for 17.9%, postinflammatory hypopigmentation accounting for 10.7%, hypopigmented nevus accounting for 9.5%, and vitiligo accounting for 3.6%.⁽¹³⁾

In a cross-sectional study in China on 2726 patients with PA for the first time revealed that the disease can be seen all year, with the onset peak occurring from July to August each year. It often happens between the ages of 1 and 14 just before puberty. For babies and teenagers, sun protection and moisture retention measures should be stepped up throughout the peak PA season.⁽¹⁴⁾

Etiopathogenesis of PA:

It has been shown that there is no infectious agent responsible for this illness; hence it is not spread⁽¹⁵⁾. Many people with PA also have a history of atopic dermatitis (AD), and atopic individuals are at a higher risk for developing PA, lending credence to the theory that atopy and post-inflammatory alterations are at the root of the disorder⁽¹⁶⁾.

Pityriasis alba has been linked to both individual and familial atopy histories (especially in first-degree relatives) In a patient with comparable clinical symptoms, the presence of at least one atopic feature, particularly xerosis, ichthyosis, or hyperlinearity of the palms, may expect the diagnosis of PA.⁽¹⁷⁾ Gawai et al.,

enlisted 122 PA patients and 122 age-matched controls in cross-sectional study. There were (93.4%) of the patients and (54.1%) of the controls showed at least one atopic characteristic, including xerosis, ichthyosis, hyperlinearity of the palms, recurrent conjunctivitis, hand and foot dermatitis, nummular eczema.⁽¹⁸⁾ Hypopigmentation due to pityriacin, a chemical generated by *Malassezia* yeasts that functions as a natural sunscreen, is also a proposed mechanism for the development of PA⁽²⁾.

In a cross-sectional study, Martinez-Fierro et al. attempted to assess the levels of inflammatory and Oxidative stress-related gene expression in biopsy specimens and their correlation with Pityriasis alba. They indicate that abnormal skin tissue exhibits molecular phases of PA, which are determined by the over-expression (first stage) or under-expression (second stage) of the IL-6 and IFN genes. In stages I and II of the melanosome's development, when it is still lacking pigment, the production of IFN may result in a hypopigmentation phenotype and interrupt melanosome development.⁽¹⁹⁾

Another aspect that seems to be widespread in PA is excessively dry skin, a problem that is aggravated by the dry, cold climates in which many people live [15]. Summer's increased incidence of PA may be attributable to the common practice of exposing oneself to the sun without protection⁽²⁰⁾. Long periods of sun exposure have a significant correlation with the development of PA, especially in darker phototypes. This correlation is likely the result of localized inflammatory responses brought on by the intense solar irradiation.⁽²¹⁾

Inadequate hygiene practices and environmental variables like temperature, humidity, and altitude also have a role in the development of PA⁽²²⁾.

Indicating a role for helminths and *Gardia lamblia* in the development of PA, a parasitological investigation is now possible for patients with PA after a favorable clinical response to antiparasitic treatment in 60% of cases⁽²³⁾. A case-control study was conducted by Assad et al on 43 children aged 5 to 15 who had hypopigmented patches. Anti-helminthic medications were administered to 4/43 (9.3%) instances who initially had *Enterobius vermicularis*, and after a week, the infection was entirely eliminated. 39/43 (90.7%) children who did not have an infestation were considered the control group and received a placebo. Although patients had more hypopigmented patches (6.0 2.9) and bigger ones (120.0 72.2) than did the control group (4.9 3.6 and 90.0 58.3, respectively), the discrepancy between the two groups' hypopigmented patch numbers and sizes was not statistically significant ($p>0.6$). There is insufficient evidence to conclusively link intestinal parasite infection in children with hypopigmented patches.⁽²⁴⁾ In a cross sectional study comprised 180 PA patients and 100 healthy people. Antiparasitic medications were used to treat PA patients with intestinal parasites. After 6 weeks, the patient's reaction to antiparasitic medication was assessed. A favorable clinical response to antiparasitic medication suggests that intestinal parasites have a role in PA pathophysiology⁽²³⁾.

A 15-fold increase in PA risk was seen in those with zinc deficiencies⁽²⁵⁾. The risk of PA was enhanced by almost a factor of six in those with copper deficiency⁽²²⁾. With tyrosinase, copper plays a coenzyme role in the oxidation of tyrosine, a crucial step in the melanogenesis process. Copper deficiency also manifests as hypopigmentation [26]. In a case-control study, 110 Egyptians (55

cases and 55 controls) participated. The PA group had considerably reduced Hb levels, serum ferritin, copper, zinc, and magnesium levels⁽²²⁾. A decrease in hemoglobin levels is a known risk factor for PA, increasing the likelihood of developing the disease by more than nine⁽¹⁵⁾.

Histopathology:

Pityriasis alba has microscopic characteristics like chronic dermatitis with reduced melanin synthesis. These include perivascular infiltrates, acanthosis, spongiosis, hyperkeratosis, and parakeratosis. There are some characteristics in a biopsy specimen collected from a distinctive skin lesion that is indicative of the diagnosis despite the absence of clear diagnostic criteria. These include diminished basal layer melanin, no obvious decline in melanocyte count, and fewer active melanocytes with fewer and smaller melanosomes.^(27,82)

Clinical Presentations of PA:

Pityriasis alba often causes no symptoms; slight itching is a common sign when the condition is discovered by accident⁽¹⁵⁾. Asthma and hay fever may be present in the patient's or their family's medical history. PA is a non-specific finding commonly related to AD, which may also manifest as eczema in AD-prone locations⁽¹⁹⁾. Multiple hypopigmented macules or patches (or thin papules and plaques) of varying sizes and shapes, with blurry borders, are visible on the skin upon physical inspection⁽²⁹⁾. The face, upper arms, neck, and shoulders are typical sites for lesions, but the legs and trunk are affected far less often. Lesions are localized to the face in almost half of all patients. The areas most susceptible to this condition are the ones closest to the mouth, including the chin and the cheeks⁽³⁰⁾. PA has two unusual subtypes that

have been identified. A core area of bluish hyperpigmentation surrounded by a hypopigmented halo characterizes the pigmented pityriasis lesions. These are primarily present in people with darker skin and are frequently linked to dermatophyte infection. Involvement of the skin that is broad, symmetrical, and more persistent, lesions that are distributed more frequently on the trunk than on the face, a larger female-to-male ratio, and the histologic lack of spongiosis are all characteristics of extensive PA^{(1),(31), (32)}.

Dermoscopy of PA:

The hypopigmented macule is ill-defined whitish region with fine scales that are widely dispersed within and outside the macules on dermoscopic examination. Inside the spots, the hair has normal color. There is no distinct border separating the hypopigmented area from the surrounding skin. Some patients may have erythematous alterations within and around the macules and patches⁽³³⁾.

Differential Diagnoses of PA:

To rule out these possibilities while diagnosing PA: Diseases like psoriasis, vitiligo, and hypopigmented pityriasis Versicolor Hypomelanosis that worsens over time and covers a large area, Leprosy, Mycosis fungoides, often known as "Peter Pan Syndrome," "Nummular Eczema," or "Discoid Eczema," Rosacea, Eruptive hypomelanosis linked to viral diseases, progressive macular hypomelanosis, Tinea corporis, Acne, contact dermatitis, nevus erythematous, nevus depigmentosus, Tuberous sclerosis ash-leaf macules, Idiopathic guttate hypomelanosis, lichen sclerosis et atrophicus, lichen planus depigmentosus, ichthyosis, and hypopigmentation as a result of operations (e.g., chemical peels, dermabrasion) are all examples of hypopigmentation

(3). Several diagnostic techniques may be helpful if the diagnosis is unclear. The lesions of PA may appear exaggerated when examined under a Wood's lamp, although they are nonfluorescent. Vitiligo, on the other hand, has brighter fluorescence and margins with more distinct boundary. A skin scraping prepared with potassium hydroxide (KOH) will not contain any fungi. As opposed to pityriasis versicolor or tinea corporis, which will demonstrate the presence of fungi, this outcome is negative. Usually unnecessary, skin biopsies can discriminate between PA and mycosis fungoides when they are carried out^{(29), (34)}.

Treatment of PA:

The rash known as PA often clears up on its own. Trigger avoidance, excellent skin care in general, and parental education regarding the benign nature of this self-limited illness make up the bulk of treatment⁽²⁾. Patients should always use sun protection as a preventative measure against a change in skin tone. The sun may worsen the aesthetic look since PA lesions do not pigment properly⁽¹⁾. Psoralen and sun exposure. Pharmacological therapy is frequently unnecessary for PA since it is often self-limited and symptom-free [1]. Lubricants and emollients are often used on traditional PA⁽³⁾. Repigmentation of existing lesions may be sped up with topical steroids, which may also help with the erythema and itching accompanying the first lesions. Both tacrolimus ointment (0.1%) and pimecrolimus cream (1.0%) have shown promise in the management of PA⁽¹⁾. Evidence suggests that calcitriol is just as effective as tacrolimus⁽¹⁹⁾. Although the recurrence rate is high if treatment is discontinued, photochemotherapy may be utilized to improve repigmentation in severe instances⁽¹⁾. In the individuals who just used the moisturizer for nine

weeks. Yet, following 9 weeks of using the moisturizer, hypopigmentation had only slightly resolved.⁽²¹⁾

In Abdel-Wahab et al., prospective trial, 80 patients with PA were given topical treatments on the focal lesions twice daily for 8 weeks (Calcipotriol 0.005% cream, Tacrolimus 0.03% ointment, topical corticosteroid, and Petrolatum for Placebo). The outcome was assessed clinically. Except for those who got a placebo, there was a noticeable difference in the scaling and erythema within 3 weeks of the start of the therapy, and skin discoloration by the eighth week. Regards the repigmentation, Tacrolimus 0.03% ointment demonstrated clear superiority over both Calcipotriol 0.005% cream and topical corticosteroid. Compared to placebo, all three therapies were more effective, but Tacrolimus 0.03% showed least side effects.⁽³⁵⁾ Tacrolimus acts by inhibiting calcineurin, that disrupts the production of cytokine genes and causes a downregulation of T-cell activity in AD.⁽³⁶⁾ Through its positive impact on the xerodermic symptoms of PA patients' skin, the composition of tacrolimus may provide an extra benefit in the treatment of PA.⁽²¹⁾ Other therapeutic options, often held for severe instances, involve focused phototherapy using a 308-nm excimer laser and psoralen plus ultraviolet-A (PUVA) photochemotherapy.⁽¹⁾

Prognosis:

The prognosis for pityriasis alba is favorable. In most persons, complete repigmentation is typical. Additionally, there is a chance of becoming sunburned in hypopigmented regions. The skin condition might last from days to years. In some circumstances, the course of the condition may be shortened by the therapy.⁽²⁷⁾

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