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Polymorphous Light Eruption

Polymorphous light eruption (PML), the most common form of light-induced skin disease, is a recurrent disorder triggered by ultraviolet (UV) light exposure. Characterized by its seasonal nature, PML erupts in response to sunlight exposure, often appearing in the late spring or early summer and resolving with the advent of cooler months. The condition predominantly affects individuals with fair skin, particularly women, and may persist for years, with some patients experiencing remissions and others facing continual flare-ups. Although the eruption often heals without scarring, it can cause significant discomfort due to itching, burning, and erythema.

Etiology

The exact cause of PML remains unclear, though it is generally considered a hypersensitivity reaction to UV radiation, specifically UVB light, which triggers an immune response in genetically predisposed individuals.

In individuals with PML, exposure to UV radiation leads to the development of lesions on sun-exposed areas, including the V-shaped area of the chest, backs of the hands, outer forearms, and lower legs. These lesions typically develop 2 to 6 hours post-exposure and are often accompanied by symptoms such as itching, burning, and erythema. The severity and pattern of the eruption vary significantly between patients, with some individuals experiencing mild forms of the disease and others developing more extensive and persistent outbreaks.

The condition is often more pronounced during the early summer months when the skin is unaccustomed to sunlight, as UV exposure accumulates over time. Repeated exposure to UV light can result in "hardening," a phenomenon where the skin becomes less sensitive to sunlight due to immunologic adaptation. Over time, individuals with PML may tolerate longer periods of sun exposure without experiencing eruptions.

Risk Factors and Clinical Features

PML can begin at any age, although it most commonly manifests in young adults. The amount of sunlight exposure needed to trigger an eruption varies widely among patients, with some requiring minimal exposure to develop symptoms. In individuals with hereditary predisposition, such as certain Native American populations, PML may be more prevalent. Studies suggest that up to 50% of patients with PML have a positive family history of the disease.

The eruption often presents as small bumps or plaques, which may become confluent, particularly in areas such as the forearms, chest, and hands. The papular type, characterized by numerous small bumps, is the most common form of PML. The plaque type, which can be superficial or hive-like, primarily affects the arms, lower legs, and chest and is often associated with vesicles and significant itching.

In addition to the dermatologic symptoms, systemic manifestations may occur, including fatigue, chills, headache, and nausea. These symptoms typically emerge a few hours after sun exposure and last for a short duration (1–2 hours). The eruption often lasts for 2–3 days, although in some cases, it may persist until the end of the summer.

Diagnosis

Diagnosis of PML is typically clinical, based on the patient's history of sun exposure, seasonal recurrence of eruptions, and the characteristic appearance of the lesions. Laboratory tests are usually not required unless there is suspicion of other underlying conditions, such as connective tissue diseases. In rare cases, a skin biopsy may be performed to confirm the diagnosis and exclude other dermatological conditions, such as lupus erythematosus or drug-induced photosensitivity reactions.

Treatment Options

While there is no cure for PML, several treatment strategies are employed to manage symptoms and prevent flare-ups. Treatment approaches focus on alleviating the symptoms, reducing UV exposure, and enhancing the skin's tolerance to sunlight. The following options are commonly used:

- **Topical Corticosteroids:** Short courses of topical steroids, usually of mild to moderate strength, are often effective in reducing inflammation and alleviating symptoms. Topical corticosteroids are typically applied to the affected areas for 3–14 days during flare-ups to control itching and erythema.
- **Sun Protection:** Prevention is the cornerstone of PML management. Sun protection measures should be implemented during times of peak sun intensity (10 a.m. to 3 p.m.), which is when UV radiation is strongest. Patients should use broad-spectrum sunscreens with a high sun protection factor (SPF), ideally containing physical blockers like titanium dioxide or zinc oxide. Sunscreens should be reapplied frequently, especially after sweating or swimming. Additionally, protective clothing, such as hats, long sleeves, and pants, can help minimize sun exposure.
- **Phototherapy: Phototherapy** is considered a mainstay treatment for PML, particularly for individuals with frequent or severe flare-ups. Phototherapy involves controlled, repeated exposure to UV light to induce hardening and desensitize the skin to sunlight. This treatment can be done using either natural sunlight or artificial ultraviolet light sources.

PUVA (psoralen plus ultraviolet A) therapy, which involves the use of a photosensitizing agent (psoralen) followed by exposure to UVA light, has shown efficacy in patients who do not respond to topical treatments or who experience significant eruptions each summer.

- **Oral Medications:** In severe cases or during acute flare-ups, ***oral corticosteroids*** may be prescribed to reduce inflammation and hasten resolution. However, due to potential side effects, such as weight gain, mood changes, and immune suppression, these are typically reserved for short-term use. ***Antimalarial medications****,* such as hydroxychloroquine, may also be used in patients with severe or persistent PML, especially those who do not respond to other treatments. Antimalarials are thought to modulate immune responses and may offer protection against sun-induced flare-ups.
- **Desensitization (Hardening):** Desensitization through controlled sun exposure is another approach used to manage PML. Gradual exposure to sunlight can help "harden" the skin, reducing sensitivity and preventing the eruption. This process should be carefully monitored by a dermatologist to avoid sunburn and excessive skin damage.

Prognosis

PML is a chronic, recurrent condition that often improves with repeated sun exposure, but flare-ups are likely to continue in subsequent summers. While the condition is not life-threatening and typically resolves without scarring, it can significantly impact quality of life due to the discomfort associated with outbreaks. With appropriate treatment and sun protection measures, most individuals can manage their symptoms effectively, although permanent remission is uncommon.

Conclusion

Polymorphous light eruption is a common photosensitivity disorder characterized by recurrent, pruritic eruptions triggered by sunlight. While the condition is typically benign, it can cause significant discomfort and disrupt daily life. Effective management requires a combination of preventive measures, including sun protection, and therapeutic interventions such as topical corticosteroids, phototherapy, and oral medications. Long-term exposure to sunlight, while initially exacerbating symptoms, may eventually lead to desensitization and a reduction in the frequency and severity of flare-ups.

References

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