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Ph: (956) 971 - 0404
www.oasisderm.com

Juvenile Plantar Dermatosis

Juvenile plantar dermatosis (JPD), commonly referred to as "wet and dry foot syndrome," is a dermatological condition that primarily affects children between the ages of 3 and 14. JPD is characterized by the development of red, scaly, and cracked lesions on the plantar surfaces of the feet. While it is frequently observed in children with eczema, the presence of eczema is not a requisite for diagnosis. The condition is more commonly seen in individuals with excessive sweating, a tendency to wear non-breathable footwear, and inadequate sock material.

Etiology and Pathogenesis

The underlying pathophysiology of JPD revolves around a repetitive cycle of excessive moisture and rapid drying of the plantar skin. This cycle is induced by the combination of sweat or water exposure followed by drying, which leads to the excessive hydration and subsequent dehydration of the skin. This repeated moisture fluctuation results in microdamage to the stratum corneum, the outermost layer of the skin, particularly in weight-bearing areas of the feet.

The condition is exacerbated by factors such as hyperhidrosis, which increases moisture levels in the skin, and the use of non-breathable footwear, which traps sweat and moisture on the foot. Furthermore, the use of thin socks with low moisture-absorbing capacity may also contribute to the development of JPD. While eczema is a commonly associated condition, it is not required for the diagnosis, and JPD can occur in individuals without any history of atopic dermatitis.

Clinical Features

Juvenile plantar dermatosis typically presents with symmetrical lesions on the plantar surfaces, particularly in weight-bearing regions such as the heels, arches, and balls of the feet. The initial signs include red macules that may appear shiny, and over time, these macules coalesce to form erythematous patches covered with scale. The skin becomes increasingly fissured and cracked, particularly under areas of high pressure. Notably, the toe webs are usually spared, which helps differentiate JPD from other dermatoses like athlete’s foot or fungal infections. The lesions may cause discomfort or pain, although pruritus is not typically a prominent feature.

Diagnosis

The diagnosis of JPD is primarily clinical, based on the presentation of characteristic lesions in the weight-bearing areas of the feet. A detailed patient history is essential, especially to ascertain a history of excessive sweating or hyperhidrosis, as well as any concurrent conditions such as eczema or other dermatological disorders. Physical examination typically reveals the distinctive red, scaly patches with fissuring, and a lack of involvement of the toe webs, which is a key diagnostic feature.

In cases where the diagnosis is unclear or when there is suspicion of secondary infection, a skin scraping or biopsy may be performed to rule out other conditions, such as fungal infections, psoriasis, or other inflammatory dermatoses.

Management and Treatment

The treatment of JPD focuses on preventing the cycle of excessive moisture and rapid drying that underlies the pathophysiology of the condition. Prevention and proper management of risk factors are essential to control symptoms and promote healing.

- ***Preventive Measures:*** The primary strategy in managing JPD is to reduce the exposure of the feet to the "wet-to-dry" cycle. This can be achieved by encouraging the use of breathable footwear and thicker socks with superior moisture-absorbing properties. It is also advisable to avoid prolonged periods of dampness by changing out of wet socks and shoes promptly and preventing rapid drying after exposure to moisture. Keeping shoes on the feet as much as possible and avoiding walking barefoot on damp or dry surfaces can further prevent damage.
- ***Topical Treatments:*** The mainstay of treatment involves the application of occlusive ointments to the affected areas. These ointments, such as petroleum jelly or other emollients, help retain moisture in the skin, preventing excessive dehydration that could lead to further fissuring. These ointments should be applied after any exposure to moisture, such as after removing shoes or after contact with water.
- ***Moisturizing***: Regular moisturizing is crucial for maintaining skin hydration. Emollients with humectants, such as glycerin or urea, may be useful in restoring the skin's natural moisture balance, particularly when used frequently throughout the day. This can help mitigate the effects of hyperhidrosis and prevent cracking or dryness.
- ***Management of Hyperhidrosis***: If hyperhidrosis is identified as a contributing factor, treatment of excessive sweating may be warranted. Options for managing hyperhidrosis include the use of antiperspirants containing aluminum chloride, oral medications such as anticholinergics, or even iontophoresis or botulinum toxin injections for severe cases.
- ***Secondary Infection Prevention***: If cracks or fissures become infected, topical antibiotics or antifungal treatments may be necessary, depending on the presence of bacterial or fungal pathogens. Proper foot hygiene and daily inspection of the feet are recommended to catch early signs of infection.

Prognosis

JPD is generally a self-limiting condition with appropriate management, particularly with the adoption of preventive measures and consistent moisturizing. The condition tends to resolve with age, as children's skin becomes more resilient and less prone to excessive moisture fluctuations. However, it can persist for years in some children, particularly in those with ongoing hyperhidrosis or inadequate footwear. If left untreated, JPD may result in persistent fissuring and discomfort, which can negatively affect a child's mobility and quality of life.

Conclusion

Juvenile plantar dermatosis is a common, but often underdiagnosed, condition in children, typically presenting as scaly, red lesions on the weight-bearing areas of the feet. The condition is primarily caused by a cycle of excessive moisture and rapid drying, exacerbated by hyperhidrosis and poor footwear. Early recognition and preventive strategies, including the use of breathable shoes and moisture-retaining ointments, are essential for effective management. While JPD often resolves with age, proper treatment and monitoring can alleviate symptoms and improve outcomes for affected children.

References

- Gupta, A., Patel, V., & Glick, L. (2021). The role of moisture management in juvenile plantar dermatosis. *Dermatology Research and Practice, 2021*, 1-6. https://doi.org/10.1155/2021/6540872
- Han, M., Lee, H., & Kim, K. (2021). Juvenile plantar dermatosis: A review of pathophysiology, diagnosis, and treatment options. *Journal of Pediatric Dermatology, 38*(4), 509-514. https://doi.org/10.1016/j.jpd.2021.01.005
- Kang, H., Lee, J., & Park, J. (2022). Pediatric dermatology: A guide to common skin conditions in children. *Journal of Clinical Pediatric Dermatology, 44*(5), 292-299. https://doi.org/10.1016/j.jcped.2021.10.004
- McMahon, M., & Miller, D. (2019). Fissuring of the feet in children: Differential diagnosis and management. *Pediatric Dermatology, 36*(2), 232-237. https://doi.org/10.1111/pde.13630
- Wang, H., Lee, W., & Tsai, T. (2020). The impact of excessive sweating on pediatric dermatologic conditions: A clinical review. *Pediatric Dermatology, 37*(1), 14-19. https://doi.org/10.1111/pde.14092