

Single Case

Psoriasiform Diaper Rash Possibly Induced by Oral Propranolol in an 18-Month-Old Girl with Infantile Hemangioma

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Keywords

Diaper rash · Psoriasiform eruption · Drug induced · Propranolol · Infantile hemangioma

Abstract

Propranolol, a nonselective blocker of β -adrenergic receptors, has become the first-line treatment for complicated infantile hemangiomas. Therefore, its use in the pediatric population has expanded in recent years. In adults, β -blockers have been reported to be the most common causative agents for drug-induced psoriasis. In infants treated with propranolol for infantile hemangioma, the onset of psoriasiform diaper rash has not yet been reported. Here, to the best of our knowledge, we report the first case of psoriasiform diaper rash possibly induced by oral propranolol in an 18-month-old girl with no family history of psoriasis.

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Introduction

Propranolol, a non-cardioselective β -blocking drug, is considered the first-line treatment for complicated infantile hemangioma, which is associated with the potential compromise of vital functions, disfigurement, or bleeding. Potentially harmful adverse effects, in-

cluding bradycardia, hypotension, bronchospasm, and hypoglycemia, occur infrequently. Common adverse effects include sleep disturbance and discoloration with cooling of the hands and feet [1, 2]. Here, we describe the case of an 18-month-old girl (with no family or individual history of psoriasis) who developed psoriasiform diaper rash, possibly induced by oral propranolol therapy for infantile hemangioma.

Case Report

An 18-month-old girl presented to the department of dermatology with a 3-week history of recalcitrant diaper rash. She had been successfully treated with oral propranolol for superficial and deep infantile hemangioma on the right cheek from the age of 3 months to the end of her first year of life. At 16 months of age, propranolol was reinitiated because the growth of the infantile hemangioma had rebounded, primarily in the deeper component of the tumor. Six weeks after restarting propranolol, the child developed a diaper rash. She was initially diagnosed with irritant diaper dermatitis with secondary *Candida* infection, based on a positive potassium hydroxide (KOH) examination of skin scrapings. The rash did not respond to multiple topical therapies, including zinc oxide-based ointments, antifungal creams and low-potency topical corticosteroid (desonide cream). A physical examination revealed well-defined erythematous scaly patches and plaque on the convex surfaces in the diaper area, with satellite lesions (Fig. 1). The skin folds, including the gluteal cleft, were spared. The skin swabs for bacterial cultures were negative. The lesions were clinically consistent with a psoriasiform eruption. The patient had no positive family or individual history of psoriasis. Therefore, psoriasiform diaper rash, possibly induced by oral propranolol, was diagnosed. The patient was treated with a medium- to high-potency topical corticosteroid (fluticasone propionate cream), and she experienced rapid and complete resolution (within 1 week) of the psoriasiform diaper rash (Fig. 2). One month later, the propranolol was discontinued because the hemangioma improved, and there was no recurrence of the psoriasiform diaper rash.

Discussion

With a prevalence of approximately 0.7%, psoriasis is a common chronic inflammatory cutaneous disease among children [3]. The median age of onset for childhood psoriasis is between 7 and 10 years [4]. Psoriatic diaper rash, otherwise known as napkin psoriasis, is a special clinical variant that appears in young infants (younger than 2 years of age) and is characterized by sharply demarcated erythematous patches and/or plaque in the diaper area, which may be associated with satellite psoriasiform lesions [5]. This clinical variant can be differentiated from irritant diaper dermatitis by its unique presentation and poor response to conventional diaper dermatitis treatment [6]. Precipitating factors are more common in pediatric psoriasis than in adult-onset psoriasis [7]. These factors include trauma, infections (e.g., streptococcal pharyngitis or perianal streptococcal dermatitis), stress, and drugs [8]. In the literature, few drugs have demonstrated a well-documented, strong causal relationship with the development of psoriasis or psoriasiform eruptions in the pediatric population. These therapeutic agents include tumor necrosis factor alpha inhibitors [9], imiquimod [10], growth hormone therapy [11], and rituximab [12].

β -Blockers have been reported as the most common causative agents for drug-induced psoriasis in adults [13]. However, to the best of our knowledge, there have been no well-described reports of psoriasiform eruptions due to β -blockers in children. In adults, the latency period between starting β -blockers and the appearance of psoriasis can vary from several days to 12 months, on average. The reasons for these variations remain unknown; however, the influence of individual, genetic, and racial differences is implied [13]. Our patient developed psoriasiform diaper rash 6 weeks after beginning the propranolol therapy. In addition, the occurrence of psoriasiform diaper rash temporally coincided with the re-administration of propranolol, suggesting a causal relationship between the drug and the skin eruption. Moreover, our patient had no family history of psoriasis. In contrast, in a study of 1,262 pediatric patients, 71% of the patients with psoriatic diaper rash had a positive family history [14]. The precise pathogenetic mechanism through which β -blockers may induce psoriasis remains unknown. It has been postulated that the blocking of epidermal β -receptors by β -blockers may decrease intraepidermal cyclic adenosine monophosphate (cAMP) levels, with a consequent increase of epidermal cell turnover as seen in psoriasis [13]. Indeed, the attachment of the normal β -agonists to β -receptors in the skin is necessary to increase cellular cAMP levels. cAMP, an intracellular second messenger, is part of a pathway that stimulates the proteins responsible for the differentiation and inhibition of epidermal cell proliferation [15].

β -Blockers are now considered to be the first-line systemic therapy for complicated cases of infantile hemangioma. Therefore, in recent years, its use has expanded in the pediatric population. To the best of our knowledge, here, we report the first case of psoriasiform diaper rash developing during propranolol therapy in a child with infantile hemangioma. This case also highlights the use of medium- to high-potency topical corticosteroids in treating this new potential adverse event. For physicians, awareness of this potential adverse event will facilitate its early recognition and prompt treatment.

Statement of Ethics

The authors have no ethical conflicts to disclose.

Disclosure Statement

The authors declare no conflicts of interest.

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Fig. 1. Psoriasiform diaper rash with well-demarcated erythematous scaly patches and plaque in the diaper area 6 weeks after beginning propranolol therapy.



Fig. 2. Complete resolution of the psoriasiform diaper rash after 1 week of treatment with medium- to high-potency topical corticosteroids.