Acute Localized Bullous Eruption in a Boy

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A 10-YEAR-OLD BLACK BOY had a 2-month history of pruritic blisters and erosions on the extremities. He denied previous similar episodes, systemic medications, or exposure to insects.

Physical examination revealed multiple 3- to 6-mm tense translucent bullae arising on both erythematous bases and normal-appearing skin of the arms and legs. There were scattered crusted erosions in a similar distribution (Figure 1 and Figure 2). The trunk and mucosal surfaces were unaffected.

A biopsy specimen of the edge of a bulla was obtained (Figure 3 and Figure 4). A biopsy specimen of perilesional skin on the leg was taken and sent for direct immunofluorescence. Serum samples were obtained for indirect immunofluorescence. A skin surface culture was performed for bacteria.

What is your diagnosis?

Figure 1.

Figure 2.

Figure 3.

Figure 4.

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Denouement and Discussion

Bullous Reaction to Insect Bites

Microscopically, a subepidermal blister was seen. The blister roof showed considerable necrosis without acantholysis. A sparse mixed inflammatory cell infiltrate composed primarily of eosinophils was seen in the dermis. Results of direct and indirect immunofluorescence were negative.

DISCUSSION

Insect bites can cause a variety of cutaneous manifestations, ranging from urticarial papules to vesicles and bullae. While bites from different species of insects may give rise to similar lesions, flea bites are the most likely to cause bullae, especially on the legs. Lesions tend to show irregular or linear grouping, may be asymmetrically distributed, and involve exposed extremities.1

The exact pathogenesis of cutaneous reactions to insect bites is unknown. A direct toxic effect from the bite is unlikely, at least for fleas and mosquitoes. One study has suggested that cutaneous vasculitis may be responsible.2 An immunologic hypersensitivity, however, is most widely theorized, initiated by insect salivary antigens.3 Initial bites typically do not produce a significant lesion. Sensitization subsequently occurs in 1 to 2 weeks. With subsequent bites, firm, pruritic papules develop within 24 hours. On continued exposure, immediate wheals may develop in addition to the papules. Bulla formation may also occur. These reactions may persist indefinitely with repeated exposure; more commonly, however, repeated bites result in desensitization.4

The microscopic morphology of insect bites varies as widely as the cutaneous lesions, ranging from a sparse perivascular lymphocytic infiltrate intermingled with eosinophils, to a dense dermal infiltrate of lymphocytes in a follicular arrangement, to a subepidermal bulla with dermal infiltrate of eosinophils.5

Differential diagnosis of bullous insect bites includes bullous pemphigoid (BP), chronic bullous dermatosis of childhood (CBDC), bullous erythema multiforme, and bullous impetigo. Bullous pemphigoid is uncommon in childhood; fewer than 50 cases have been reported. Oral bullae are often present, and involvement is not limited to the extremities. Children with CBDC typically exhibit large bullae on the legs, buttocks, and perineum, often in rosette patterns. Immunofluorescence patterns of BP and CBDC differ: they show linear deposition of IgG and IgA, respectively, at the basement membrane zone. While bullous erythema multiforme may be difficult to differentiate clinically from other subepidermal blistering disorders, its microscopic appearance with necrotic keratinocytes and dermal lymphocytic infiltrate can be diagnostic. Clinically, bullous impetigo characteristically exhibits collarets of scale around erosions. Histology shows a subcorneal pustule, and bacterial culture yields Staphylococcus aureus.6

Initially, because of the history of spontaneous eruption of the bullae, we did not consider insect bites in the differential diagnosis. Results of direct and indirect immunofluorescence studies were negative. With the microscopic appearance of the bullae, and the negative immunofluorescence, we reviewed the patient’s history more closely and discovered several factors suggesting insect bites. The patient’s family, for example, had a new dog with fleas. In addition, the patient often rolled in the grass while playing outdoors. Finally, the patient’s sister recently had similar lesions in a similar distribution.

In children, bullous eruptions are often caused by insect bites, which can be difficult to diagnose. Patients are often unaware of being bitten. Despite equal exposure to offending insects within a family, members vary in their sensitivity to bites. Knowledge of seasonal occurrence and exposure to insects provide clues to diagnosis. In uncertain cases, biopsy for histopathology and immunofluorescence may be necessary.


REFERENCES


Clinical Pearl

Protein Restriction Prevents Progression of Kidney Disease

“Dietary protein restriction effectively slows the progression of both diabetic and nondiabetic renal diseases.” The rate of progression was reduced by one third to one half. (Ann Intern Med. 1996;124:726-732.)