

Pressure Urticaria in an Infant Appearing Similar to Physical Abuse

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abstract

A healthy Hispanic boy was born via cesarean delivery after an uncomplicated pregnancy. At 4 weeks old, his parents brought him to the emergency department for bruising on both soles of the feet. At 6 weeks old, his parents brought him to primary care for new bruises on his arms and back. After evaluation, primary care referred the patient to the emergency department. The parents denied any recent trauma, fever, cough, decreased urine, or change in appetite. Because of 2 episodes of unexplained bruising, the Department of Children and Families was granted emergency custody of the child. Hematology and ophthalmology did not identify any clear abnormalities. Skeletal surveys were normal. Dermatology was consulted. The examination was normal except for pink blanching patches on the upper back and linearly arranged pink blanching papules on the right lower leg. No crusting, erosions, hyperpigmentation, purpura, petechiae, or ecchymoses were seen. These lesions completely resolved the next day. He tested positive for dermatographism and developed similar lesions on his soles after pushing his feet down onto a soft surface. The intermittent urticarial skin changes were most consistent with physical urticaria. Such lesions could be mistaken for trauma; however, blood vessel damage typically results in progressive coloration changes for >1 day. At the emergency court hearing, given the concurring medical opinions of the dermatologist, pediatrician, and Child Protective Services, the judge returned full custody to the parents. This case reveals the value of dermatologic expertise in assessing skin changes, particularly those associated with physical abuse.

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CASE REPORT

A healthy Hispanic boy was born via cesarean delivery after an uncomplicated pregnancy. At 4 weeks old, his parents brought him to the emergency department (ED) for purplish bruising on both soles of the feet of 8 hours (Fig 1). At 6 weeks old, his parents brought him to primary care for bruises on his arms and back of several hours. After seeing the bruises, primary care referred the patient to the ED. The parents denied any recent trauma, fever, cough, decreased urine, or change in appetite. Because of 2 episodes of unexplained bruising, the Department of Children and Families

was granted emergency custody of the child.

Hematology and ophthalmology did not identify any abnormalities. Laboratory studies including complete blood cell count, coagulation studies, ABO incompatibility, direct antiglobulin test, and lactate dehydrogenase were within normal limits. A skeletal survey including head and abdominal computed tomography scans did not reveal abnormalities. Ophthalmology did not find any signs of ocular trauma.

Dermatology was consulted 2 days after admission. The examination was normal except for pink blanching

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patches on the upper back (Fig 2A) and linearly arranged pink blanching papules on the right lower leg at the site of the hospital identification band (Fig 2B). No crusting, erosions, hyperpigmentation, purpura, petechiae, or ecchymoses were seen. The identification band was removed. The next day, the lesions had completely resolved without further intervention. At that time, he also tested positive for dermatographism (Fig 3) and developed similar lesions on his soles 5 minutes after pushing his feet down onto a soft surface (Fig 4 A and B).

The intermittent pink geometric skin changes were consistent with physical urticaria. At the emergency court hearing, given the concurring medical opinions of the dermatologist, pediatrician, and Child Protective Services, the judge returned full custody to the parents. A 6-week follow-up did not reveal any skin findings.

DISCUSSION

The possibility of child abuse should be raised whenever there is unexplained skin bruising. When compared to the bruises in toddlers who crawl and walk, bruises are highly unusual in nonmobile infants. In particular, petechiae or linear bruises, bruises in clusters or conforming to a pattern, and bruises along the torso, upper extremities, ear, neck, and buttocks areas are significantly likely to be cases of physical abuse.¹ Bruising can assume multiple colors because damage to blood vessels results in blood extravasation into soft tissues with a series of progressive coloration changes, from red, blue, purple, or black to yellow.² In our patient, the lesions were geometric, unexplained, and occurred on the trunk and leg, thus raising suspicion for child abuse. However, on closer examination, there was no true bruising or blood extravasation found in the patient,



FIGURE 1
"Bruising" on the right sole seen on presentation to the ED.

and the lesions resolved completely within a day without any residual discoloration that would be expected for a traumatic bruise. Instead, the skin changes were most consistent with physical urticaria.

Physical urticaria has been documented in infants and is caused



FIGURE 3
Faint "X" after dermatographism test: 5 minutes after scratching the back gently with the back of a pen in the shape of an X, a faint, light-pink urticarial patch was seen in the shape of an X.

by friction and pressure after firm stroking and the application of pressure to the skin; it tends to resolve without any residual changes within hours to days. There have been several cases of acquired persistent purplish linear bands thought to be from pressure from socks on the lower feet in infants with dermatographism between the ages of 1 and 4 months of age³ and a case in a healthy term newborn with dermatographism with triangular and linear urticarial papules on the thighs, which occurred after a diaper change.⁴ Often, no connection can be made between physical pressure and the appearance of the lesions. In our case, for example, the parents did not



FIGURE 2
A, On the upper right back, there were several poorly demarcated, blanching, mildly pink linear macules and patches without crusting or erosions. B, On the right lower leg, there were several pink linear papules at the edges of the ankle bracelet.



FIGURE 4

A, Before the testing, the soles are skin colored. Also note the complete resolution of the papules on the right lower leg without changes in pigmentation after removal of the identification band. B, After the mother picked up the infant in her lap, the infant stamped his feet against his mother's lap repeatedly. After 5 minutes, he developed moderate pink-red erythematous urticarial macules and patches on the soles of his feet.

have any explanation for the skin findings. However, we suspect that the infant car seat, with square shaped padding on the upper back created the pink linear plaque on the upper back; the hospital identification band produced the linear pink papules on the right lower leg; and the stomping of the feet produced the deep red discoloration of the soles.

There are many types of physical urticaria in children, including cold contact urticaria, delayed pressure urticaria, heat contact urticaria, and solar urticaria. Physical urticaria causes between 5% and 10% of all cases of urticaria in children.⁵ The etiology of physical urticaria has been attributed to cutaneous pressure that

triggers mast cell activation and degranulation, leading to skin inflammation.³ There has been some association with cutaneous mastocytosis in chronic cases. In addition to physical urticaria, other reported potential causes of inducible urticaria include cholinergic, medications, allergens, autoimmunity, or infections.⁶ However, in cases of physical urticaria confirmed by appropriate physical testing, rarely are further investigations required.⁷

In our case, the judge returned full custody to the parents at the emergency court hearing given the concurring medical opinions of the dermatologist, pediatrician, and Child Protective Services. This case reveals

the value of dermatologic expertise in assessing skin changes, particularly those associated with physical abuse.

ABBREVIATION

ED: emergency department

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