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Solitary hemorrhagic cutaneous mastocytoma of infancy with digital localization: a case report

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Abstract

Solitary cutaneous mastocytoma is the most common form of pediatric cutaneous mastocytosis and usually follows a benign, self-limited course. However, atypical clinical presentations such as hemorrhagic or bullous evolution and uncommon anatomical localization may raise diagnostic concerns and lead to unnecessary investigations. We report the case of a male infant presenting with a solitary hemorrhagic mastocytoma localized on a finger. The lesion showed episodic blistering and hemorrhage after minimal mechanical stimulation, without systemic symptoms. Dermoscopic examination revealed a structureless erythematous-violaceous background without melanocytic features. Histopathological analysis demonstrated a dense dermal mast cell infiltrate with strong CD117 and CD25 expression, confirming the diagnosis. Conservative management resulted in spontaneous regression without sequelae. This case highlights the importance of clinicopathological correlation in recognizing atypical presentations of solitary mastocytoma and avoiding misdiagnosis and overtreatment.

Introduction

Cutaneous mastocytosis comprises a heterogeneous group of disorders characterized by abnormal accumulation of mast cells within the skin. In infancy and early childhood, solitary cutaneous mastocytoma represents the most frequent clinical presentation and is generally associated with an excellent prognosis, often undergoing spontaneous regression during childhood.[1,2] Clinically, it usually appears as a yellow-brown or reddish-brown nodule or plaque, most commonly involving the trunk or proximal extremities. Occasionally, solitary mastocytoma may present with atypical features, including bullous or hemorrhagic evolution, which can complicate the clinical picture and mimic vascular tumors, blistering disorders, or more aggressive forms of mastocytosis.[3,4] Acral localization is particularly rare and may further increase diagnostic uncertainty. Awareness of these unusual presentations is essential to ensure accurate diagnosis and appropriate management.

Case Report

A male infant, born at term after an uneventful pregnancy and perinatal period, was referred for evaluation of a lesion on the dorsal surface of the third finger of the right hand. At approximately 3 months of age, a small erythematous papule appeared and progressively enlarged over the following weeks, becoming tense, violaceous, and intermittently hemorrhagic, with episodes of superficial blistering, crusting, and erosion.

The parents reported episodic swelling and darkening of the lesion, often triggered by minimal mechanical stimulation. No systemic symptoms such as flushing, diarrhea, wheezing, syncope, or

hypotensive episodes were reported. Family history was negative for mast cell disorders or atopic disease. On physical examination, the lesion appeared as a well-circumscribed, dome-shaped nodule with a reddish-brown to violaceous coloration and a smooth, tense surface (Figure 1A). During active phases, hemorrhagic blistering was evident (Figure 1B), followed by partial regression. A Darier sign was suspected but inconsistently elicitable, likely due to previous inflammation and the acral location, a limitation previously reported in pediatric mastocytoma.[2] Dermoscopy revealed a predominantly structureless pink-to-reddish background with diffuse erythema, consistent with mast cell mediator-induced vasodilation. Areas of violaceous discoloration corresponded to intralesional hemorrhage. A fine reticular vascular pattern was observed at the periphery, while pigment networks, globules, or other melanocytic structures were absent (Figure 1C). Although dermoscopy was not diagnostic for mastocytoma, these findings supported a non-melanocytic inflammatory process.[1]

The absence of a characteristic vascular pattern suggestive of hemangioma or other vascular tumors further supported the decision to perform a punch biopsy to exclude vascular tumors and other malignant or inflammatory mimickers. Histopathological examination showed a dense infiltrate of mast cells within the superficial dermis, composed of spindle-shaped and round to oval cells with abundant pale eosinophilic cytoplasm. No cytologic atypia or mitotic activity was identified.

Immunohistochemical staining demonstrated strong positivity for CD117 (c-KIT) and CD25, confirming mast cell lineage and supporting the diagnosis of solitary cutaneous mastocytoma. Although CD25 expression may suggest clonality, in pediatric cutaneous mastocytosis it does not necessarily indicate systemic involvement and should be interpreted in the appropriate clinical context.[1,3]

Baseline serum tryptase levels were within the normal range, and abdominal ultrasonography revealed no abnormalities suggestive of systemic involvement. A conservative management approach was adopted, consisting of parental reassurance and avoidance of mechanical triggers. No topical or systemic therapy was initiated.

Over the following weeks, the lesion progressively flattened, with complete resolution of hemorrhagic and bullous components (Figure 2A). At 3-month follow-up, only a faint erythematous residual area was present (Figure 2B), without functional impairment of the digit or signs of systemic mastocytosis.

Discussion

Solitary cutaneous mastocytoma is typically a benign condition with spontaneous regression. However, hemorrhagic or bullous variants may represent a diagnostic pitfall, especially when localized to uncommon acral sites. Blistering and hemorrhage are thought to result from extensive

mast cell degranulation with release of histamine, proteases, and heparin, leading to increased vascular permeability and fragility.[4]

The differential diagnosis of a hemorrhagic acral lesion in infancy includes infantile hemangioma with thrombosis, congenital hemangioma, bullous arthropod reactions, Langerhans cell histiocytosis, and diffuse cutaneous mastocytosis. In the absence of systemic symptoms and with supportive histopathological findings, solitary mastocytoma should be considered even in clinically alarming presentations.

Conclusions

Hemorrhagic blistering lesions on acral sites in infancy may represent a benign solitary mastocytoma rather than vascular or malignant conditions. Recognition of this uncommon presentation is essential to avoid misdiagnosis, unnecessary investigations, and overtreatment.

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Figure 1. A) The lesion on the dorsal surface of the third finger of the right hand at the first evaluation. **B**) Hemorrhagic blistering was observed during active phases. Dermoscopy: structureless pink-to-reddish background with diffuse erythema and areas of violaceous discoloration. **C**) Peripheral fine reticular vascular pattern.

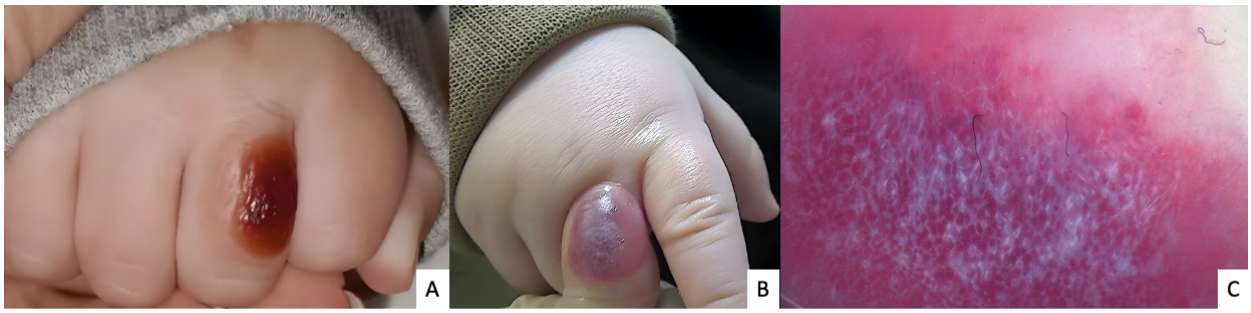

Figure 2. A) Flattening of the lesion with resolution of hemorrhagic and bullous components after the first weeks of avoidance of mechanical triggers. **B**) Complete resolution with only a faint erythematous residual area at 3-month follow-up.