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## **Distinctive dermoscopic features of early juvenile xanthogranuloma within the benign cephalic histiocytosis spectrum**

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**Ethics approval and consent to participate:** this case was conducted in accordance with institutional ethics guidelines. Informed consent to participate was obtained from the patient's legal guardian.

**Consent for publication:** written informed consent for publication of the clinical details and images was obtained from the child's legal guardian.

**Availability of data and materials:** all data underlying the findings are fully available.

Dear Editor,

A 10-month-old child presented with multiple asymptomatic papules involving the forehead, scalp, lateral cervical folds, axillary creases, and diaper area. The lesions appeared as dome-shaped erythematous to flesh-colored papules with superficial scaling. In the diaper region, the papules were sharply demarcated and showed a central yellowish core surrounded by a pale peripheral rim. No mucosal involvement, systemic symptoms, or laboratory abnormalities were detected.

Clinical differential diagnoses included molluscum contagiosum, cutaneous sarcoidosis, mastocytosis, viral warts, inflammatory papular dermatoses, Langerhans cell histiocytosis (LCH), and juvenile xanthogranuloma (JXG). Dermoscopy revealed a highly consistent pattern across all sites. Each lesion showed a central multilayered yellow-orange keratotic core rather than the homogeneous yellow background typically reported in histiocytic disorders (Figure 1).<sup>1</sup>

Within this keratinous core, multiple closely grouped hemorrhagic dots were visible; their exact histopathological correlate remains uncertain.<sup>2</sup> The most distinctive feature was a bright, sharply circumscribed peripheral white ring surrounding the lesion, from which centrifugal radial desquamation extended in a sunburst-like pattern. The peripheral erythematous halo was subtle and respected the boundaries of the white ring, in contrast to the diffuse erythema of irritant dermatitis or papular eczema.

Histopathological examination demonstrated a dense dermal infiltrate composed of large histiocytes with abundant eosinophilic cytoplasm and scattered inflammatory cells. Touton-like giant cells were occasionally present. Unlike LCH, which expresses CD1a and Langerin, the infiltrate showed strong CD68 and factor XIIIa positivity and was negative for CD1a and Langerin, supporting non-Langerhans cell histiocytosis (NLCH).

The young age, multiple monomorphic papules, prominent head and neck involvement, and absence of systemic disease overlapped with benign cephalic histiocytosis (BCH), whereas the occasional Touton-like giant cells favored JXG. Because BCH and early JXG may overlap clinically and histopathologically,<sup>3</sup> the case was considered most consistent with early cutaneous JXG within the BCH-JXG spectrum, rather than unclassified NLCH.

Epidermal changes included focal parakeratosis and compact orthokeratosis, correlating with the dermoscopic keratotic core and peripheral white scaling ring. Reported dermoscopic findings in LCH include purplish-red globules or patches related to erythrocyte extravasation, while a yellow background and other vascular structures may also occur.<sup>1,4</sup>

By contrast, yellow-orange structureless areas predominate in several cutaneous NLCHs: JXG classically displays the “setting-sun” pattern;<sup>2</sup> a similar appearance has been reported in BCH,<sup>3</sup> whereas generalized eruptive histiocytosis may show homogeneous orange-yellow pigmentation with delicate branching or serpentine vessels and red clods.<sup>5</sup> Neither yellow-orange nor hemorrhagic structures are therefore exclusive to NLCH.

However, the combination observed here – multilayered yellow-orange keratotic core, clustered hemorrhagic dots, and a sharply demarcated white ring with radial scaling – was reproducible across lesions and was not described in the cited reports. It should be regarded as a preliminary dermoscopic clue rather than a disease-specific sign.

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**Figure 1.** Clinical and dermoscopic features of pediatric non-Langerhans cell histiocytosis (dermoscopic magnification  $\times 10$ ). a) Multiple dome-shaped erythematous to flesh-colored papules involving the forehead and scalp margin. b) Sharply demarcated papules in the diaper area, with central yellowish cores and mild surrounding erythema. c) Dermoscopy at  $\times 10$  showing a multilayered central yellow-orange keratotic core surrounded by a pale erythematous halo. d) Additional dermoscopic view at  $\times 10$  highlighting clustered central hemorrhagic dots and a sharply defined peripheral white ring with centrifugal radial scaling.

