Firm, enlarging papule on an infant's proximal thigh

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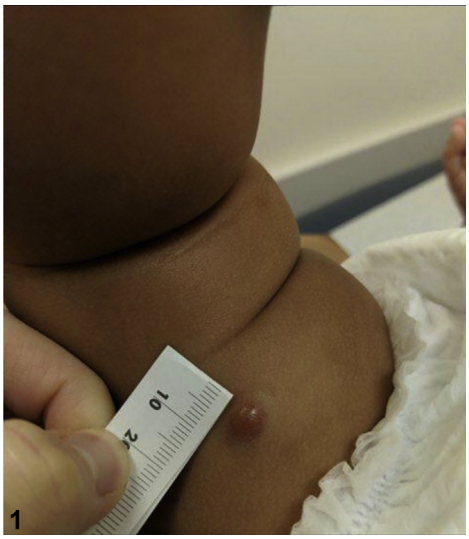
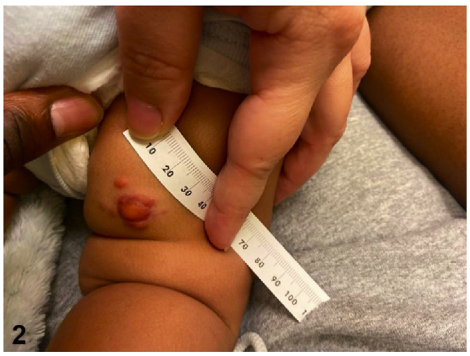
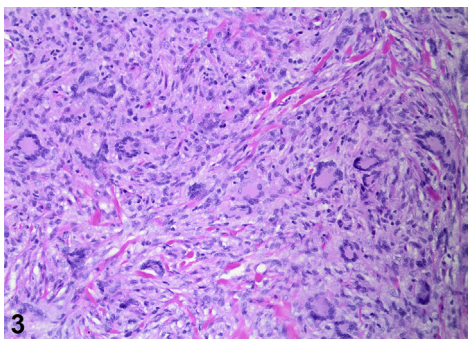
Key words: agminated; clustered; dermatofibrosarcoma protuberans; en plaque; juvenile xanthogranuloma.







A 3-month-old infant was referred to the dermatology service for evaluation of a rapidly growing nodule on the posterior aspect of the right thigh, present since birth (Fig 1). The lesion rapidly grew from a 6-mm papule at birth to a 1.7-cm nodule with surrounding papules and central coalescence at the time of presentation (Fig 2). A 4-mm punch biopsy was performed and submitted for histologic examination (Fig 3).

From the Department of Dermatology, Baylor College of Medicine.
Funding sources: None.
IRB approval status: Not applicable.
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JAAD Case Reports 2022;19:78-80.
2352-5126

https://doi.org/10.1016/j.jdcr.2021.08.038

Question 1: Based on the clinical presentation and histologic features, what is the diagnosis?

A. Dermatofibrosarcoma protuberans (DFSP)

B. Spitz nevus

C. Juvenile xanthogranuloma (JXG)

D. Cutaneous mastocytoma

E. Giant cell reticulohistiocytoma

Answers:

A. DFSP – Incorrect. The rapid progression and morphology initially raised concern for DFSP, which presents as a locally aggressive, multinodular lesion on the proximal aspects of the extremities or trunk. However, the histology of DFSP shows spindle cells arranged in fascicles with infiltration of adnexal structures without Touton giant cells.

B. Spitz nevus – Incorrect. Spitz nevi are well-circumscribed, dome-shaped papules or nodules that vary in color, with agminated or clustered subtypes reported. However, histology shows nests of large epithelioid cells without Touton giant cells.

C. JXG – Correct. JXG is the most common histiocytic disease of childhood and presents on the head and neck, upper torso, upper extremities, and less frequently the lower extremities. This patient's presentation with multiple papules and nodules in a localized distribution and varying coalescence has variably been described in the literature as the "clustered," "*en plaque*," or "agminated" JXG subtype.

D. Cutaneous mastocytoma – Incorrect. Cutaneous mastocytomas can present congenitally or in infancy as a tan or brown nodule or plaque with a leathery texture, exhibiting a positive Darier sign. Mast cell infiltrates and hyperpigmentation of the basal layer are seen on histology.

E. Giant cell reticulohistiocytoma – Incorrect. Giant cell reticulohistiocytomas occur predominantly in Caucasian adults and would be unusual in an infant. While giant cells are also seen, the nuclei are arranged haphazardly and without a xanthomatous periphery, in contrast to the Touton giant cells of JXG.

Question 2: Which of the following regarding JXG is true?

A. There is an association between JXG and neurofibromatosis (NF) type 2

B. Involvement of distant structures is common

C. The pathogenesis involves hypertriglyceridemia

D. Ocular involvement is an uncommon extracutaneous manifestation

E. Immunohistochemistry staining is positive for CD1a and CD207

Answers:

A. There is an association between JXG and NF2 type 2 – Incorrect. JXG is reported in 8.5%-37.5% of NF1patients.[1] To date, an association between JXG and NF2 has not been reported.

B. Involvement of distant structures is common – Incorrect. In most patients with skin-limited disease, the course is self-limited. Very rarely, JXG may exhibit systemic involvement. In one review, the most common sites of extracutaneous involvement were the liver (72.2%), bone marrow (16.7%), and lung (16.7%).[2] In patients with extracutaneous JXG, cutaneous JXG were usually numerous with widespread distribution.[2]

C. The pathogenesis involves hypertriglyceridemia – Incorrect. Though the exact cause of JXG is unknown, it is believed to be a reactive process in which histiocytes take up lipids in the absence of hyperlipidemia.

D. Ocular involvement is an uncommon extracutaneous manifestation – Correct. Chang et al reported the incidence of ocular involvement in patients with cutaneous JXG to be approximately 0.3% and found that most were diagnosed due to ocular symptoms and not routine screening.[3,4] Thus, it may not be necessary to refer patients with multiple JXG to ophthalmology in the absence of ocular complaints.[5] Complaints of photophobia or unilateral ocular irritation and/or physical exam findings such as iris or conjunctival masses, hyphema, or uveitis warrant prompt ophthalmologic evaluation to prevent secondary glaucoma and vision loss.[5]

E. Immunohistochemistry staining is positive for CD1a and CD207 – Incorrect. Langerhans cell histiocytosis stains positive for CD1a and CD207. JXG stains positive for CD68, vimentin, and Factor XIIIa and negative for CD1a and CD207

Question 3: Which of the following is *not* a subtype of JXG?

A. Agminated

B. Morpheaform

C. Large nodular

D. Subcutaneous

E. Small nodular

Answers:

A. Agminated — Incorrect. The JXG clinical variant seen in this patient with multiple coalescing papules and nodules has been described as "agminated," "clustered," or "*en plaque*" in the literature.[2]

B. Morpheaform — Correct. "Morpheaform"-type lesions have been described in a variety of skin conditions, including basal cell carcinoma and chronic graft-versus-host disease. This is not a clinical variant of JXG.

C. Large nodular — Incorrect. "Large nodular" JXG usually appears as one or a few nodules that are 1-2 cm in diameter.

D. Subcutaneous — Incorrect. "Subcutaneous" JXG can present in the subcutaneous fat, deep soft tissue, and muscle, where it is usually seen as a solitary lesion. Due to their depth, subcutaneous JXG usually lack the characteristic yellow hue.

E. Small nodular — Incorrect. The "small nodular" variant, also known as the "micronodular" variant, presents as multiple reddish-brown or pink papules, usually 2-5 mm in diameter. The lesions are usually seen scattered across the upper part of the body and become yellow as they mature.

Abbreviations used:

DFSP: dermatofibrosarcoma protuberans
JXG: juvenile xanthogranuloma(s)
NF1: neurofibromatosis type 2
NF2: neurofibromatosis type 1

Conflicts of interest

None disclosed.

REFERENCES

1. Fenot M, Stalder JF, Barbarot S. Juvenile xanthogranulomas are highly prevalent but transient in young children with neurofibromatosis type 1. *J Am Acad Dermatol*. 2014;71(2):389-390. https://doi.org/10.1016/j.jaad.2014.02.049
2. Oza VS, Stringer T, Campbell C, et al. Congenital-type juvenile xanthogranuloma: a case series and literature review. *Pediatr Dermatol*. 2018;35(5):582-587. https://doi.org/10.1111/pde.13544
3. Chang MW, Frieden IJ, Good W. The risk intraocular juvenile xanthogranuloma: survey of current practices and assessment of risk. *J Am Acad Dermatol*. 1996;34(3):445-449. https://doi.org/10.1016/s0002-9394(14)71993-2
4. Chang MW. Update on juvenile xanthogranuloma: unusual cutaneous and systemic variants. *Semin Cutan Med Surg*. 1999;18(3):195-205. https://doi.org/10.1016/S1085-5629(99)80017-0
5. Samuelov L, Kinori M, Chamlin SL, et al. Risk of intraocular and other extracutaneous involvement in patients with cutaneous juvenile xanthogranuloma. *Pediatr Dermatol*. 2018;35(3):329-335. https://doi.org/10.1111/pde.13437