

## Ulcerated indurated plaques on the upper extremities



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A 74-year-old man presented with an 8-month history of slowly expanding, indurated erythematous to yellow plaques on the bilateral upper extremities. Several were centrally ulcerated (Figs 1 and 2). The face, oral mucosa, trunk, and lower extremities were spared. The plaques were asymptomatic. Normal sensation was detected within the plaques. Medical history was significant for idiopathic thrombocytopenia and smoldering IgG- $\kappa$  plasma cell multiple myeloma. Social history was significant for significant sun exposure from golfing without the use of sun protection. A 4-mm punch biopsy of the right upper extremity was obtained.

### Question 1: What is the most likely diagnosis?

- A. Granuloma annulare (GA)
- B. Xanthoma disseminatum (XD)
- C. Annular elastolytic giant cell granuloma (AEGCG)
- D. Necrobiotic xanthogranuloma (NXG)

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**E.** Necrobiosis lipidica (NL)**Answers:**

**A.** GA – Incorrect. Although indurated, annular plaques on the extremities are seen, the lesions of GA do not ulcerate.

**B.** XD – Incorrect. XD has a predilection for intertriginous areas, which are not involved in this patient. Additionally, about half of patients with XD have involvement of the mucous membranes, which are spared in this patient.

**C.** AEGCG – Incorrect. Although this patient does have a history of excessive sun exposure, and lesions are affecting chronically sun-exposed areas, AEGCG is atrophic centrally rather than ulcerated. Lesions also lack the yellow coloration seen with NXG.

**D.** NXG – Correct. Classically, patients present with asymptomatic, red-orange to yellow firm indurated papules, nodules, or plaques that frequently ulcerate. Lesions typically affect the face, most commonly with periorbital lesions. Involvement of the trunk and extremities is uncommon but may occur as demonstrated in this case.<sup>1-3</sup>

**E.** NL – Incorrect. Ulceration is a finding seen in both NXG and NL; however, the lesions of NL lack the induration seen in NXG and instead are atrophic plaques with prominent telangiectasias.

**Question 2: What is the histopathology?**

**A.** Dense infiltrate of foamy histiocytes and Touton giant cells, with karyorrhexis, degenerated collagen and cholesterol clefts.

**B.** Alternating layers of acellular pale collagen and granulomatous infiltrate composed of giant cells and plasma cells.

**C.** Interstitial arrangement of histiocytes, lymphocytes, and mucin throughout the dermis with occasional multinucleated histiocytes.

**D.** Dense dermal deposition of extracellular lipid and foamy cells.

**E.** Thick, hyalinized collagen bundles and trapped eccrine glands.

**Answers:**

**A.** Dense infiltrate of foamy histiocytes and Touton giant cells, with karyorrhexis, degenerated collagen and cholesterol clefts – Correct. The histopathology of NXG is densely cellular and

characterized by numerous foamy histiocytes and the presence of Touton or wreath-like giant cells. Necrobiosis (degenerated and pale collagen), cholesterol clefts, and neutrophilic debris are also present.<sup>4</sup>

**B.** Alternating layers of acellular pale collagen and granulomatous infiltrate composed of giant cells and plasma cells – Incorrect. This is the histopathology seen in NL. The classic layered arrangement is often described as *cake layers* or *lasagna*.

**C.** Interstitial arrangement of histiocytes, lymphocytes, and mucin throughout the dermis with occasional multinucleated histiocytes – Incorrect. This is the histopathology seen in interstitial GA. Biopsies of NXG lesions do not typically have mucin.

**D.** Dense dermal deposition of extracellular lipid and foamy cells – Incorrect. The findings of extracellular lipid with foamy cells are seen in eruptive xanthomas. Extracellular lipid is not seen in NXG.

**E.** Thick, hyalinized collagen bundles and trapped eccrine glands – Incorrect. These histopathologic findings are commonly seen in scleroderma and morphea. NXG lesions do not have thick collagen bundles.

**Question 3: What is the most common systemic association?**

**A.** Diabetes mellitus

**B.** Diabetes insipidus

**C.** Monoclonal gammopathy

**D.** Solid organ malignancy

**E.** No systemic associations

**Answers:**

**A.** Diabetes mellitus – Incorrect. NL and controversially, GA, can be associated with diabetes mellitus; however, NXG is not.

**B.** Diabetes insipidus – Incorrect. Diabetes insipidus, along with cutaneous xanthomas and xanthomas of the mucous membranes compose the classic triad in xanthoma disseminatum. Diabetes insipidus is not an association seen with NXG.

**C.** Monoclonal gammopathy – Correct. NXG is a paraprotein-associated disorder, and 80% to 90% of affected patients have a monoclonal gammopathy of undetermined significance, most commonly IgG- $\kappa$ , whereas 10% have multiple

myeloma.<sup>4</sup> Additional associations include non-Hodgkin lymphoma, chronic lymphocytic leukemia, Hodgkin lymphoma, and lymphoplasmacytic lymphoma.<sup>5</sup>

**D.** Solid organ malignancy — Incorrect. Although NXG is a paraneoplastic disorder, it has not been associated with solid organ malignancy.

**E.** No systemic associations — Incorrect. Although AEGCG does not have any systemic associations, NXG is frequently associated with a paraproteinemia.<sup>5</sup>

**Abbreviations used:**

AEGCG: annular elastolytic giant cell granuloma

GA: granuloma annulare

NL: necrobiosis lipoidica

NXG: necrobiotic xanthogranuloma

XD: xanthoma disseminatum

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