Solitary Nodule on the Thigh

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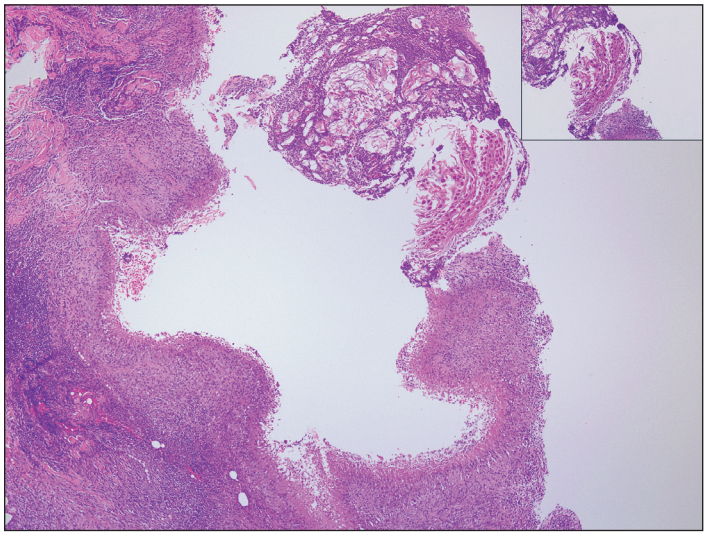

H&E, original magnification ×40 (inset, original magnification ×100).

A 17-year-old adolescent girl presented with a discrete nodule on the thigh.

THE BEST **DIAGNOSIS IS:**

a. epithelioid sarcoma
b. granulomatosis with polyangiitis
c. lupus miliaris disseminatus faciei
d. rheumatoid nodule
e. ruptured molluscum

PLEASE TURN TO PAGE 19 FOR THE DIAGNOSIS

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The authors report no conflict of interest.
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THE **DIAGNOSIS:** Ruptured Molluscum

Molluscum contagiosum (MC) is caused by a DNA virus (MC virus) belonging to the poxvirus family. Molluscum contagiosum is common and predominantly seen in children and young adults. In sexually active adults, the lesions commonly occur in the genital region, abdomen, and inner thighs. In immunocompromised individuals, including those with AIDS, the lesions are more extensive and may cause disfigurement.[1] Molluscum contagiosum involving epidermoid cysts has been reported.[2]

Histopathologically, MC can be classified as noninflammatory or inflammatory. In noninflamed lesions, multiple large, intracytoplasmic, eosinophilic inclusions (Henderson-Paterson bodies) appear within the lobulated endophytic and hyperplastic epidermis. Ultrastructurally, these bodies show membrane-bound collections of MC virus.[1] Replicating Henderson-Paterson bodies can result in rupture and inflammation. This case demonstrates a palisading granuloma containing keratin with few Henderson-Paterson bodies (quiz image) due to prior rupture of a molluscum or molluscoid cyst.

Rheumatoid nodules, the most characteristic histopathologic lesions of rheumatoid arthritis, are most commonly found in the subcutis at points of pressure and may occur in connective tissue of numerous organs. Rheumatoid nodules are firm, nontender, and mobile within the subcutaneous tissue but may be fixed to underlying structures including the periosteum, tendons, or bursae.[3,4] Occasionally, superficial nodules may perforate the epidermis.[5] The inner central necrobiotic zone appears as intensely eosinophilic, amorphous fibrin and other cellular debris. This central area is surrounded by histiocytes in a palisaded configuration (Figure 1). Multinucleated foreign body giant cells also may be present. Occasionally, mast cells, eosinophils, and neutrophils are present.[6,7]

Lupus miliaris disseminatus faciei presents with multiple discrete, smooth, yellow-brown to red, dome-shaped papules. The lesions typically are located on the central and lateral sides of the face and infrequently involve the neck. Other sites including the axillae, arms, hands, legs, and groin occasionally can be involved. Diascopy may reveal an apple jelly color.[8,9] The histopathologic hallmark of lupus miliaris disseminatus faciei is an epithelioid cell granuloma with central necrosis (Figure 2).

Epithelioid sarcoma (ES) is a soft tissue tumor with a known propensity for local recurrence, regional lymph node involvement, sporotrichoid spread, and distant metastases.[10] The name was coined by Enzinger[11] in 1970 during a review of 62 cases of a "peculiar form of sarcoma that has repeatedly been confused with a chronic inflammatory process, a necrotizing granuloma, and a squamous cell carcinoma." Epithelioid sarcoma tends to grow slowly in a nodular or multinodular manner along fascial structures and tendons, often with central necrosis and ulceration of the overlying skin. Histopathologically, classic ES shows nodular masses of uniform plump epithelioid cells with abundant eosinophilic cytoplasm and prominent central necrosis. A biphasic pattern is typical with spindle cells merging with epithelioid cells. Cellular atypia is relatively mild and mitoses are rare (Figure 3). Recurrent or metastatic lesions can show a greater degree of pleomorphism.[12] Given the low-grade atypia in early lesions, this sarcoma is easily misdiagnosed

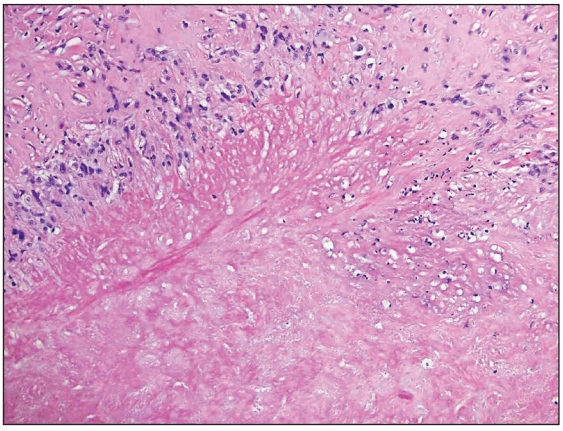

FIGURE 1. Rheumatoid nodule histopathology with a central fibrinous area surrounded by histiocytes in a palisaded pattern (H&E, original magnification ×200).

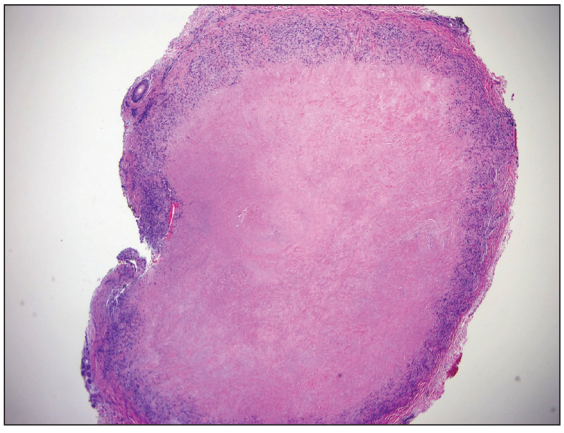

FIGURE 2. Lupus miliaris disseminatus faciei histopathology with palisading epithelioid cell granuloma with central necrosis (H&E, original magnification ×100).

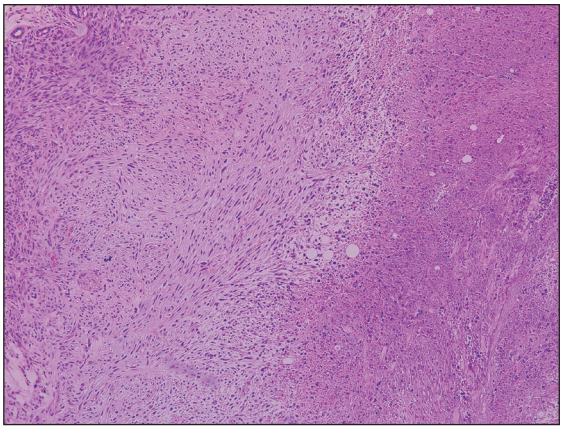

FIGURE 3. Epithelioid sarcoma histopathology with plump epithelioid and spindled cells with abundant eosinophilic cytoplasm and prominent necrosis (H&E, original magnification ×200).

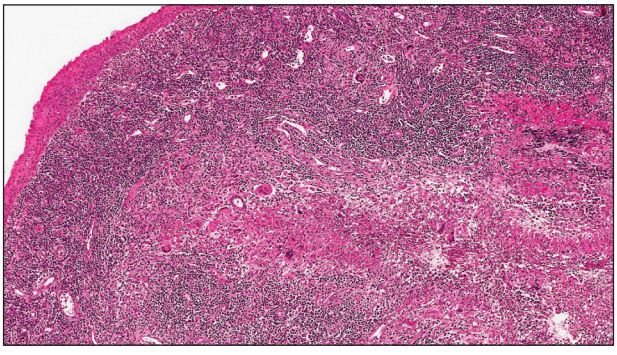

FIGURE 4. Granulomatosis with polyangiitis histopathology with necrosis and palisades of macrophages with scattered multinucleated giant cells with a central neutrophilic infiltrate (H&E, original magnification ×100).

as granulomatous dermatitis. Immunohistochemically, the majority of ES cases are positive for cytokeratins and epithelial membrane antigen; *SMARCB1/INI-1* expression is characteristically lost.[13]

Granulomatosis with polyangiitis (formerly Wegener granulomatosis) is an autoimmune vasculitis highly associated with antineutrophil cytoplasmic antibodies. Clinical manifestations include systemic necrotizing vasculitis; necrotizing glomerulonephritis; and granulomatous inflammation, which predominantly involves the upper respiratory tract, skin, and mucosa.[14,15] Skin involvement may be the initial manifestation of the disease and consists of palpable purpura, papules, ulcerations, vesicles, subcutaneous nodules, necrotizing ulcerations, papulonecrotic lesions, and petechiae. None of the findings are pathognomonic. The cutaneous histopathologic spectrum includes leukocytoclastic vasculitis, extravascular palisading granulomas, and granulomatous vasculitis.[16] In the acute lesions of granulomatosis with polyangiitis, the predominant pattern of inflammation is not granulomatous but purulent with the appearance of an abscess. As it evolves, it develops a central zone of necrosis with extensive karyorrhectic debris and palisades of macrophages with scattered multinucleated giant cells (Figure 4).[17]

REFERENCES

1. Nandhini G, Rajkumar K, Kanth KS, et al. Molluscum contagiosum in a 12-year-old child—report of a case and review of literature. *J Int Oral Health.* 2015;7:63-66.
2. Phelps A, Murphy M, Elaba Z, et al. Molluscum contagiosum virus infection in benign cutaneous epithelial cystic lesions-report of 2 cases with different pathogenesis? *Am J Dermatopathol.* 2010;32:740-742.
3. Sayah A, English JC 3rd. Rheumatoid arthritis: a review of the cutaneous manifestations. *J Am Acad Dermatol.* 2005;53:191-209; quiz 210-192.
4. Sibbitt WL Jr, Williams RC Jr. Cutaneous manifestations of rheumatoid arthritis. *Int J Dermatol.* 1982;21:563-572.
5. Barzilai A, Huszar M, Shpiro D, et al. Pseudorheumatoid nodules in adults: a juxta-articular form of nodular granuloma annulare. *Am J Dermatopathol.* 2005;27:1-5.
6. Garcia-Patos V. Rheumatoid nodule. *Semin Cutan Med Surg.* 2007; 26:100-107.
7. Patterson JW. Rheumatoid nodule and subcutaneous granuloma annulare. a comparative histologic study. *Am J Dermatopathol.* 1988;10:1-8.
8. Sehgal VN, Srivastava G, Aggarwal AK, et al. Lupus miliaris disseminatus faciei part II: an overview. *Skinmed.* 2005;4:234-238.
9. Cymerman R, Rosenstein R, Shvartsbeyn M, et al. Lupus miliaris disseminatus faciei. *Dermatol Online J.* 2015;21. pii:13030/qt6b83q5gp.
10. Sobanko JF, Meijer L, Nigra TP. Epithelioid sarcoma: a review and update. *J Clin Aesthet Dermatol.* 2009;2:49-54.
11. Enzinger FM. Epitheloid sarcoma. a sarcoma simulating a granuloma or a carcinoma. *Cancer.* 1970;26:1029-1041.
12. Fisher C. Epithelioid sarcoma of Enzinger. *Adv Anat Pathol.* 2006; 13:114-121.
13. Miettinen M, Fanburg-Smith JC, Virolainen M, et al. Epithelioid sarcoma: an immunohistochemical analysis of 112 classical and variant cases and a discussion of the differential diagnosis. *Hum Pathol.* 1999;30:934-942.
14. Lutalo PM, D'Cruz DP. Diagnosis and classification of granulomatosis with polyangiitis (aka Wegener's granulomatosis)[published online January 29, 2014]. *J Autoimmun.* 2014;48-49:94-98.
15. Frances C, Du LT, Piette JC, et al. Wegener's granulomatosis. dermatological manifestations in 75 cases with clinicopathologic correlation. *Arch Dermatol.* 1994;130:861-867.
16. Daoud MS, Gibson LE, DeRemee RA, et al. Cutaneous Wegener's granulomatosis: clinical, histopathologic, and immunopathologic features of thirty patients. *J Am Acad Dermatol.* 1994;31:605-612.
17. Jennette JC. Nomenclature and classification of vasculitis: lessons learned from granulomatosis with polyangiitis (Wegener's granulomatosis). *Clin Exp Immunol.* 2011;164 (suppl 1):7-10.