Multiple bilateral forearm nodules

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Answer

Multiple angioliipomas.

Discussion

Axial MRI images of the left forearm demonstrate a mass with areas of macroscopic fat (Fig. 1a), along with nodular/septal areas of vascularity that are hyperintense on PD (Fig. 1b) and enhance with contrast (Fig. 1c). There are four identical lesions in the subcutaneous tissues of the contralateral, right forearm (Fig. 2). Histopathology from an excised right forearm nodule demonstrates widespread clear fat cells, with interspersed small, thin-walled blood vessels (Fig. 3). There are also fibrin microthrombi, which appear as pink globules of fibrin within some vessels.

Angioliipomas are benign subcutaneous tumors that account for approximately 10% of tumors of fat [1]. They are classified as benign adipocytic tumors by the World Health Organization, in the same category as simple lipomas [2]. The pathogenesis is unknown, but they are thought to be a hamartoma of blood vessels and fat [3]. Angioliipomas present clinically as small, firm, subcutaneous nodules that are slow-growing, and often painful to palpation [4]. The most common sites are the forearm, followed by the trunk and upper arm [5].

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Angioliipomas are multiple in 70% of cases. There is a familial association in 5–10% of cases [1, 5], with no clear inheritance pattern identified. Angioliipomas have been associated with diabetes and antiretroviral therapy [6].

The MRI appearance of an angioliipoma is a small, round nodule in the subcutaneous tissues, typically measuring less than 2 cm in diameter [7]. There are areas of T1 hyperintense macroscopic fat, most prominent centrally. The vascular areas are most pronounced along the periphery, and demonstrate low T1 signal and hyperintense T2 and PD signal. The vascular areas enhance with IV contrast. The ultrasound appearance of angioliipoma is a well-circumscribed, echogenic subcutaneous nodule [8], with peripheral vascularity by Doppler imaging.

At pathology, angioliipomas are firm masses that are primarily yellow, with red areas corresponding to blood vessels [1]. There is a thin fibrous capsule with incomplete fibrous septa. Microscopically, angioliipomas are composed of vacuolated adipose cells, with interspersed thin-walled, small blood vessels, mostly capillaries. Pericytes surround the vessels, with intravascular erythrocytes. Fibrin microthrombi due to intravascular coagulation are also usually found.

The histologic appearance depends upon the density of vessels [9]. A hypovascular lesion may be difficult to differentiate from an ordinary lipoma. There are also rarely reported cellular angioliipomas with scant fat cells [1], which may be difficult to distinguish from Kaposi sarcoma. In both cases, the presence of microthrombi helps to make the diagnosis [9]. The differential diagnosis of multiple discrete vascularized subcutaneous nodules includes Kaposi sarcoma, vascular malformations, glomangiomas, and epithelioid sarcoma [10]. An unencapsulated tumor of fat and vascular tissue involving deeper tissues was previously called an infiltrating angioliipoma, but is now recognized as an intramuscular hemangioma [4, 5].

Angioliipomas have no tendency toward malignant transformation, and so do not require treatment or imaging surveillance. If symptomatic, angioliipomas can be treated by surgical excision, as in this case. There is no tendency for local recurrence after complete excision [8].

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