

Vascular Plaque in a Pregnant Patient With a History of Breast Cancer

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A 31-year-old woman at 34 weeks' gestation presented with skin discoloration of the anterior neck of 7 months' duration. Her pregnancy had been complicated by a diagnosis of invasive papillary carcinoma of the breast with unilateral complete mastectomy and negative sentinel lymph node biopsy in the first trimester. The lesion was tender, darkening, and rapidly enlarging. Physical examination demonstrated a linear, violaceous, vascular, and indurated plaque with microvesiculation that was 3.5 cm in width. She had no history of blistering sunburns, frequent UV exposure, or skin cancer.

WHAT'S YOUR DIAGNOSIS?

- a. epithelioid hemangioma
- b. Kaposi sarcoma
- c. metastatic breast cancer
- d. pyogenic granuloma
- e. tufted angioma

PLEASE TURN TO **PAGE E39** FOR THE DIAGNOSIS

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The authors report no conflict of interest.

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THE DIAGNOSIS: Tufted Angioma

Histopathology revealed discrete lobules of closely packed capillaries with bland endothelial cells throughout the upper and lower dermis (Figure 1). The surrounding crescentlike vessels and lymphatics stained with D2-40 (Figure 2). These histologic findings were consistent with tufted angioma, and the patient elected for observation.

Tufted angiomas are benign vascular lesions named for the tufted appearance of capillaries on histology.¹ They commonly present in children, with a lower incidence in adults and rare cases in pregnancy.² Tufted angiomas typically present as solitary, slowly expanding,

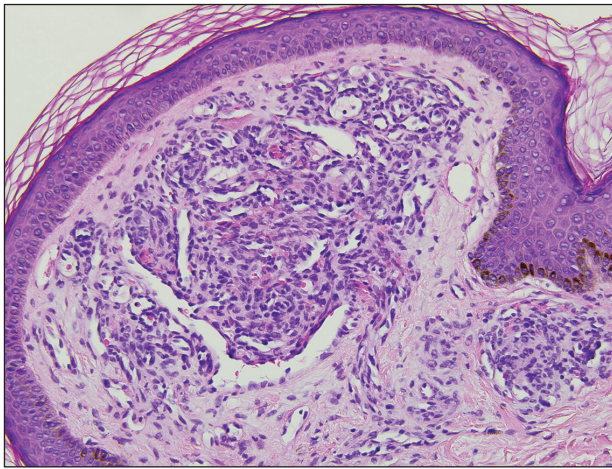


FIGURE 1. Compressed capillaries lined by bland endothelial cells with peripherally dilated crescent-shaped lymphatic channels (H&E, original magnification $\times 200$).

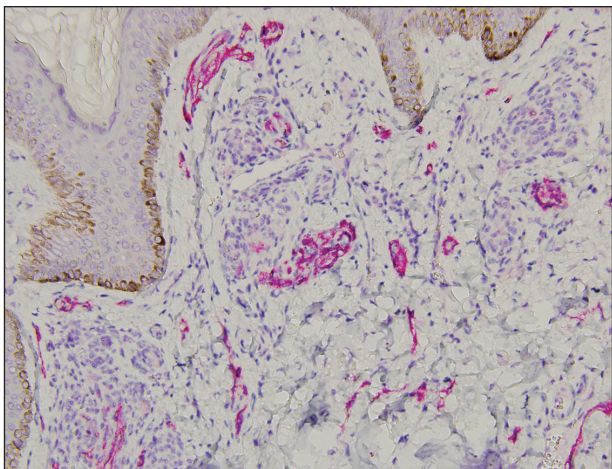


FIGURE 2. D2-40 immunohistochemical staining of lymphatics surrounding capillary proliferations with an absence of staining of the capillary endothelial cells (original magnification $\times 200$).

erythematous macules, plaques, or nodules on the neck or trunk ranging in size from less than 1 to 10 cm.²⁻⁴ They can be histologically distinguished from other vascular tumors, including aggressive malignant neoplasms.¹

Tufted angiomas are identified by characteristic “cannon ball tufts” of capillaries in the dermis and subcutis at low power.^{3,5} Distinct cellular lobules may be found bulging into thin-walled vascular channels at the margins of the lobules in the dermis and subcutis (Figure 3).⁴ The lobules are formed by cells with spindle-shaped nuclei.⁶ Some mitotic figures may be present, but no cellular atypia is seen.² The capillaries at the periphery appear as dilated semilunar vessels.⁴ Dilated lymphatics, which stain with D2-40, can be found at the periphery of the tufted capillaries and throughout the remaining dermis.^{3,4}

Tufted angiomas may arise independently in adults but also have been associated with conditions such as pregnancy. Omori et al⁷ identified an acquired tufted angioma in pregnancy that was positive for estrogen and progesterone receptors. Reports of tufted angiomas in pregnancy vary; some are multiple lesions, some regress postpartum, and some undergo successful surgical treatment.^{3,5}

Vascular lesions such as tufted angiomas specifically may appear in pregnancy due to a high-volume state with vasodilation and increased vascular proliferation. Although tumor angiogenesis has been linked to specific growth factors and cytokines, it has been hypothesized that the systemic hormones of pregnancy such as human chorionic gonadotropin, estradiol, and progesterone also shift the body to a more angiogenic state.⁸ In a study

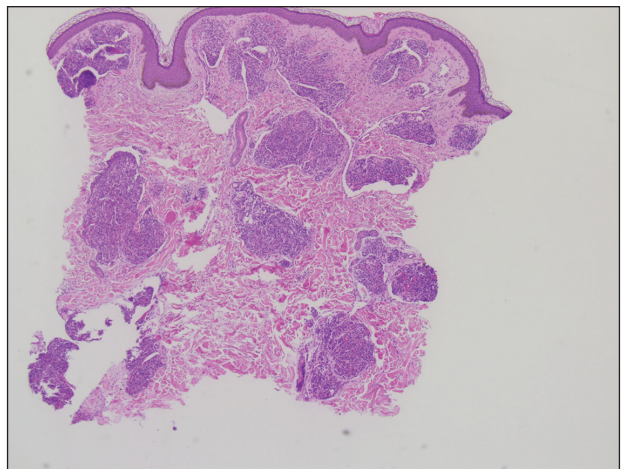


FIGURE 3. Discrete collections of closely packed capillary-sized vessels throughout the upper and lower dermis (H&E, original magnification $\times 40$).

of cutaneous changes in pregnant women (N=905), 41% developed a vascular skin change, including spider veins, varicosities, hemangiomas, and granulomas.⁹ The most common vascular tumor in pregnancy is pyogenic granuloma. Pyogenic granulomas are small, solitary, friable papules that commonly are found on the hands, forearms, face, or in the mouth; histologically they demonstrate dilated capillaries in lobular structures accompanied by larger thick-walled vessels.^{3,10,11}

Tufted angiomas may mimic a variety of other conditions. Epithelioid hemangioma, considered by some to be on the same morphologic spectrum as angiolymphoid hyperplasia with eosinophilia, classically occurs in young adults on the head and in the neck region. It histologically demonstrates a lobular appearance at low power; however, these lobules are made up of vessels with histiocytoid to epithelioid endothelial cells surrounded by a prominent inflammatory infiltrate consisting of lymphocytes and eosinophils.¹²

Kaposi sarcoma may appear on the neck but most often presents as macules and patches on the extremities that may form nodules with a rubbery consistency. In tufted angiomas, the cellular nodules with dilated channels at the margins bear a resemblance to Kaposi sarcoma or kaposiform hemangioendothelioma; however, in tufted angiomas the lobules are composed of bland spindle cells and slitlike vessels at the periphery.^{3,13,14} Tufted angiomas are negative for human herpesvirus 8 and typically do not have an associated inflammatory infiltrate with plasma cells.^{11,15}

Moreover, it is important to differentiate tufted angioma from a cutaneous manifestation of an underlying malignancy, which has been described previously in cases of breast cancer.^{16,17} Our case illustrates a rare vascular tumor arising in the novel context of a pregnant patient with breast cancer. Distinguishing tufted angioma from other benign or malignant vascular tumors is necessary to avoid inappropriate therapeutic interventions.

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