Recurrent cutaneous angiosarcoma of the ear masquerading as atypical fibroxanthoma

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INTRODUCTION

Cutaneous angiosarcoma is a rare, malignant, vascular neoplasm of the skin commonly diagnosed in the head and neck regions. Involvement of the ear is rare.[1] Although no definitive surgical guidelines exist, wide resection with possible adjuvant chemoradiation is generally accepted as the standard treatment for resectable lesions.[2] We present the case of an elderly man with extensive angiosarcoma of the ear masquerading as atypical fibroxanthoma (AFX) necessitating total auriculectomy and combined radiation therapy. Our case also shows the utility of the erythroblast transformation-specific–related gene (ERG) staining for difficult-to-diagnose angiosarcomas.

Abbreviations used:

AFX: atypical fibroxanthoma
ERG: erythroblast transformation-specific–related gene

CASE REPORT

A 65-year-old man presented for evaluation of a recurrent nodule of the left ear. Three years prior, he presented with a 6-mm papule of the left superior helix. Punch biopsy at the time found a spindle cell tumor with negative immunostaining for S-100, CD34, and MNF-116 (antipan cytokeratin antibody). He was subsequently referred to Mohs surgery for complete excision. One year later, he presented with a new 5-mm nodule at the same location on the ear. Punch biopsy at the time revealed an extensive residual dermal neoplasm composed of cytologically atypical and pleomorphic spindle cells. Immunostaining for S-100, CD34, and MNF-116 were negative, thus, favoring a diagnosis of recurrent AFX. Additional immunostaining was not done at that time, and the patient underwent radical resection of the left ear with 1-cm margins. The patient denied a history of radiation or trauma to the head and neck

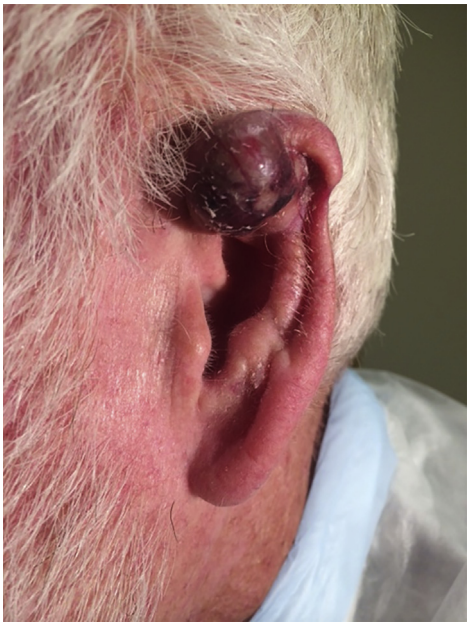

Fig 1. Clinical image. A large erythematous, violaceous nodule on the superior helical rim of the left ear.

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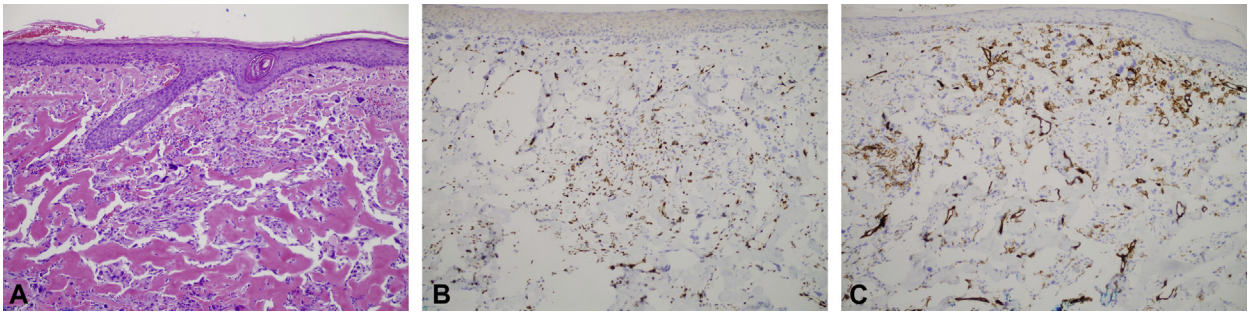

Fig 2. Histologic images. **A**, Hematoxylin-eosin stain; **B**, ERG stain; **C**, CD31 stain; original magnifications: **A** through **C**, ×100.

region. He denied past chemical exposure to arsenic, thorium dioxide, or vinyl chloride.

On examination, the patient had a 2.0- × 2.0-cm violaceous nodule on the superior helical rim of the left ear (Fig 1). A punch biopsy was sent for routine histologic evaluation and immunostaining, including ERG and CD31 staining. Hematoxylin-eosin stain showed a poorly circumscribed dermal neoplasm composed of atypical, pleomorphic spindle cells dissecting dermal collagen bundles (Fig 2, *A*). The neoplastic cells were positive for ERG (Fig 2, *B*) and CD31 (Fig 2, *C*). Immunostains for S-100, Melan-A, MNF-116, and CD34 were negative. The patient's initial surgical specimens were subsequently re-evaluated and found to be positive for ERG and CD31, thus, confirming a diagnosis of recurrent angiosarcoma. Computed tomographic imaging of the neck, chest, abdomen and pelvis showed no evidence of metastatic disease. A left total auriculectomy was performed to obtain the recommended 2-cm surgical margins. Postoperative histopathologic examination of the resected tissue found negative surgical margins. The patient was subsequently treated with adjuvant radiation therapy (60 Gy) given his high risk for local recurrence. The patient remains disease free with no signs of recurrence 9 months after treatment.

DISCUSSION

Cutaneous angiosarcomas are rare, rapidly growing, malignant vascular neoplasms of vascular endothelial cells. Predisposing risk factors include postradiation therapy (eg, breast cancer therapy), vascular insufficiency, chronic lymphedema, trauma, and chemical exposure (eg, vinyl chloride, thorium dioxide, and arsenic). However, the exact etiology is unknown in most cases.

Angiosarcomas may present in a variety of ways (eg, purpuric/vascular, nodular, eczematous, rosacealike, and ulcerative) and may be difficult to diagnose in the early stages of development. Angiosarcomas are most commonly diagnosed in elderly Caucasians, and lesions typically involve the head and neck region.[1] Cutaneous involvement of the external ear is very rare.[3,4] Aggressive angiosarcoma involving the ear represents a challenging surgical scenario and may require extensive surgical resection to obtain negative tissue margins, as demonstrated in this case.

The diagnosis of angiosarcoma requires a high index of suspicion and, therefore, should be considered in the differential diagnosis for all vascular lesions on the head and neck of an elderly patient. Biopsy is necessary to differentiate between angiosarcoma and other benign or malignant neoplasms. For recurring lesions, an incisional biopsy is imperative. In a recent review by the French Sarcoma Group, more than 50% of angiosarcoma patients had evidence of widely metastatic disease at the time of diagnosis, frequently involving the lymph nodes, bone, and internal organs.[5] Therefore, computed tomography or positron emission tomography imaging is also crucial for determining the extent of disease before treatment.

The treatment of angiosarcoma can be challenging, and the prognosis associated with these neoplasms is poor.[5] Although no definitive surgical guidelines exist to guide the management of cutaneous disease, wide resection with possible adjuvant chemoradiation is preferred.[2] However, no randomized clinical trials or evidence-based guidelines are available for the treatment of angiosarcoma. Preclinical studies suggest a potential role for β-blockers in the treatment of angiosarcoma and identify phosphoinositide-dependent protein kinase 1 as a promising therapeutic target.[6,7]

The differential diagnosis for angiosarcoma includes other spindle cell tumors, such as AFX, spindle cell and desmoplastic melanoma, squamous cell carcinoma, leiomyosarcoma, dermatofibrosarcoma protuberans, malignant fibrous histiocytoma,

and myofibrosarcoma. Immunohistochemical studies are necessary to distinguish between these tumors.[8] Stains for S-100 and cytokeratins are negative for angiosarcoma and distinguish this tumor from a spindled cell melanoma and squamous cell, respectively. Positive immunostaining for CD31, CD34, factor VIII–related antigen, and ERG are frequently observed in angiosarcoma and should be performed when this diagnosis is suspected. AFX is considered a diagnosis of exclusion and should be considered after ruling out all other differential diagnoses.

ERG is a proto-oncogene in the erythroblast transformation specific transcription factor family that is expressed in endothelial cells and appears to regulate angiogenesis.[9] Positive staining for CD31 and ERG are more sensitive markers for angiosarcoma than CD34.[10] ERG staining may provide additional diagnostic utility for atypical vascular tumors with equivocal staining for CD31 or CD34 as seen in this case. However, ERG staining has limitations, including the lack of large validation studies, weak staining patterns in one-quarter of angiosarcoma cases, and positive staining in other benign and malignant neoplasms (eg, hemangiomas, prostatic angiosarcoma, and Ewing's sarcoma).[10]

We present the case of an elderly man with extensive angiosarcoma of the ear masquerading as AFX. This report highlights the diagnostic and surgical challenges associated with spindle cell neoplasms of the skin and ear. It also provides additional support for the diagnostic value of ERG staining in cases in which the histologic features or immunostaining profile is inconclusive.

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