Eccrine Angiomatous Hamartoma: A Case Report and Review of the Literature

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GOAL

To gain a thorough understanding of eccrine angiomatous hamartoma (EAH)

OBJECTIVES

Upon completion of this activity, dermatologists and general practitioners should be able to:

1. Recognize the clinical presentation of EAH.
2. Identify the histopathology of EAH.
3. Evaluate the treatment options for EAH.

CME Test on page 440.

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Eccrine angiomatous hamartoma (EAH) is a rare, benign condition recognized histologically by increased numbers of eccrine elements, as well as numerous vascular channels. Patients typically present with a solitary, sometimes enlarging, nodule of the extremities usually appearing at birth or arising during childhood. When symptomatic, EAH may be associated with hyperhidrosis or pain. We report a case of EAH on the calf of a young girl; review all other known documented cases in the literature; and summarize the clinical characteristics, histologic findings, and prognosis of this uncommon entity.

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Eccrine angiomatous hamartoma (EAH) is a benign and uncommon malformation, characterized by increased numbers of eccrine (sweat) glands and numerous capillary channels. It is usually congenital or arises during the prepubertal years; the lesion only rarely presents during adulthood. The color of EAH may be flesh colored, blue-brown, or reddish and may occur as a nodule,

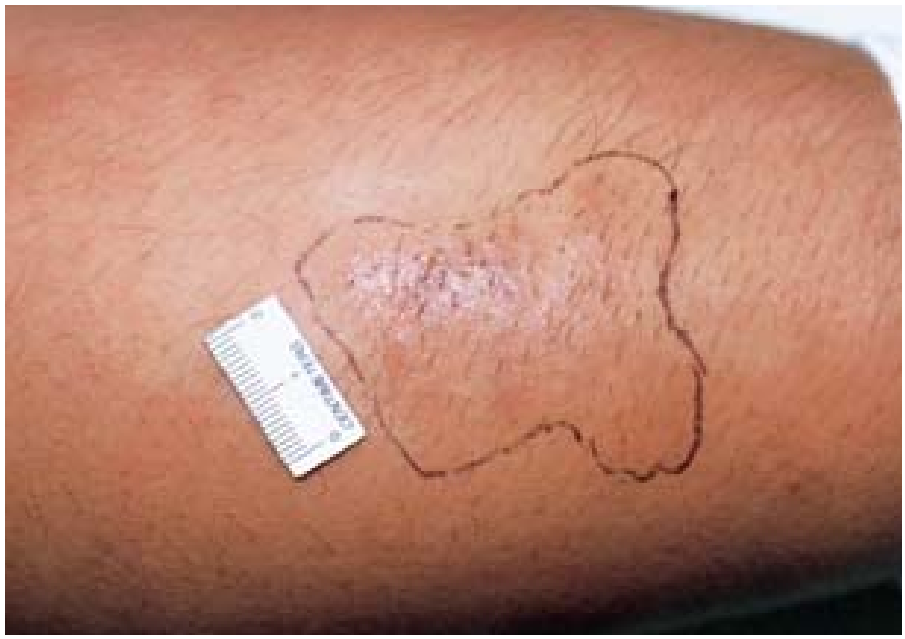

Figure 1. Hypertrichotic flesh-colored dermal tumor of the left calf.

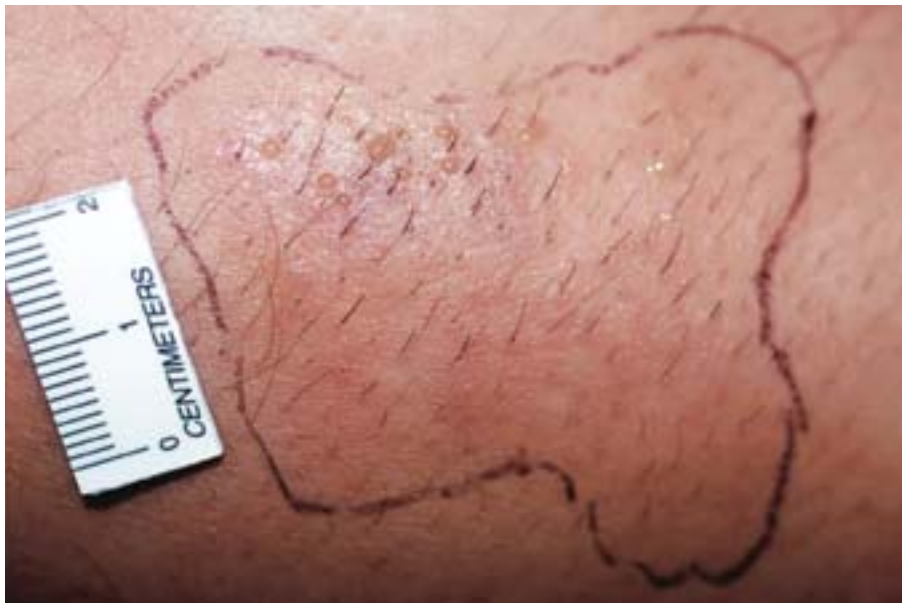

Figure 2. Closer image of the same lesion demonstrating hyperhidrotic glistening areas.

plaque, or, less commonly, a macule. In most cases, EAH arises as a single lesion on the extremity, though reports of multiple lesions and those occurring in more unusual sites exist. The symptoms most commonly associated with EAH are pain and hyperhidrosis; enlargement may occur and is usually in concordance with the growth of the patient. It is important to recognize the hamartoma as a benign clinical entity, for which aggressive management is not necessary. In this article, we report a case of EAH occurring in a young girl, and we review 41 well-documented cases in the literature.

Case Report

A 12-year-old previously healthy Hispanic girl presented with a lesion on the posterior aspect of her left lower leg. She reported that the lesion had been present since approximately 4 years of age. The patient denied spontaneous pain but described increased perspiration associated with the lesion, including occasions when she noted wet spots on her clothing overlying the area. Findings from the physical examination revealed a 6×5-cm, flesh-colored, palpable tumor in the left calf. Secretion of a clear fluid could be seen originating from the

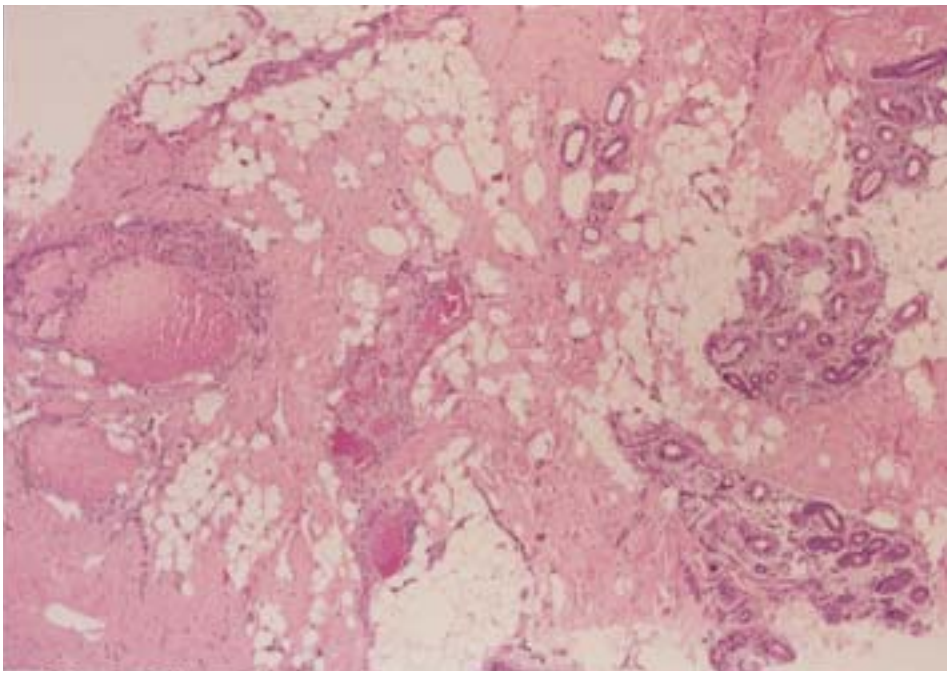

Figure 3. Increased numbers of eccrine glands and terminal hair follicles associated with abnormally dilated vessels (H&E, original magnification ×40).

surface of the tumor, and hypertrichosis was present (Figures 1 and 2). A 4-mm punch biopsy of the mass was performed, and results confirmed the diagnosis of EAH (Figure 3). Results of histopathologic examination revealed an unremarkable epidermis. An increased number of sweat glands and terminal hair follicles were found in the dermis, and dilated sweat ducts were noted in the papillary dermis. In addition, large dilated blood vessels were seen in the deep dermis and subcutaneous tissue. Intercellular mucin also was present in the dermal stroma. The constellation of clinical and pathologic features was consistent with the diagnosis of EAH.

The patient declined further diagnostic radiographic evaluation and surgical treatment. She was treated symptomatically for the hypertrichosis and hyperhidrosis, using 13.9% eflornithine cream and topical aluminum chloride, respectively.

Comment

EAH is a rare, benign cutaneous hamartoma consisting of a proliferation of both eccrine glands and thin-walled vascular channels. First described by Lotzbeck in 1859[1] as an angiomatous-appearing lesion on the cheek of a child, the term *EAH* was coined by Hyman and coworkers[2] in 1968. Since hyperhidrosis is a relatively common finding associated with this condition, various other terms have been used to describe this entity, including *sudoriparous angioma*[3] and *functioning sudoriparous angiomatous hamartoma*.[4] In addition to presenting an additional case of EAH, we review the other 41 cases of EAH reported in the literature (Table 1).

Typically, EAH presents as a solitary, flesh-colored, blue-brown, or reddish papule, plaque, or nodule. However, unusual morphologic variants exist and include hyperkeratotic[5] and verrucous[6] lesions. There appears to be no gender predilection, and the male-female ratio in the data analyzed was 1:1.1. EAH usually occurs as a solitary lesion, but cases with multiple lesions have been reported and account for approximately 26% of all cases in the literature.[3,7-13] The hamartoma often appears at birth[2,3,6,9,10,13-22,25] or during early childhood,[7,8,16,22-24] as in the present case. In the cases reviewed that were not congenital, the mean age at the time of diagnosis was approximately 21 years, and the range was between 2 months and 73 years. EAH occurs most frequently on the acral areas and, in our review, approximately 74% of all reported lesions were limited to the extremities. However, lesions also have been reported in the sacral region,[26] on the buttocks,[5,19] face,[9] chest,[8,13,15,24] or diffusely over multiple anatomic sites.[12] EAH is usually asymptomatic, but the most commonly associated symptoms are pain and hyperhidrosis reported in approximately 42% and 32% of all cases analyzed, respectively, including the present case. Approximately 17% of patients with EAH reported both pain and hyperhidrosis (sweating) simultaneously (Table 2). It is postulated that

Table 1.

Forty-One Cases of Eccrine Angiomatous Hamartoma Reported in the Literature in Addition to the Present Case*

Case	Reference	Age/ Sex	Duration	Site (No. of Lesions)	Size, cm	Symptoms	Treatment
1	Hyman et al[2]	3 y/F	Since birth	Neck (1)	3×1	None	Excision
2	Domonkos and Suarez[3]	4 y/F	Since birth	Right knee (multiple)	1.2–2	Pain, hyperhidrosis	None
3	Tsuji and Sawada[5]	73 y/F	10 y	Right buttock (1)	1.5× 0.2×0.5	Pain, hyperhidrosis	Excision
4	Zeller and Goldman[6]	37 y/M	Since birth	Right knee (1)	11×4	None	NA
5	Morrell et al[7]	14 y/F	1 y	Left wrist, right wrist (2)	3.5, 4	Pain	Excision
6	Sulica et al[8]	28 y/F	Since puberty	Forearms, trunk, chest, abdomen, back (multiple)	1–1.5	Yellow oily drainage	Excision
7	Aloi et al[9]	5 y/M	Since birth	Left cheek, trunk, extremities (20)	0.5–2	Growing, development of new lesions since initial cheek lesion	None
8	Cebreiro et al[10]	31 y/M	9 mo	Backs of fingers on both hands (multiple)	NA	None	NA
9		22 y/F	6 mo	Right hand (1)	NA	None	NA
10		24 y/F	Since birth	Left hand (1)	NA	None	NA
11		25 y/M	5 mo	Right middle finger (1)	NA	None	NA
12		16 y/M	1 y	Left index finger (1)	NA	Hardening of skin	NA
13		14 y/M	7 mo	Bilateral thumbs (2)	NA	None	NA
14		64 y/F	2 y	Right middle finger (1)	NA	Pain	NA
15	Seraly et al[11]	35 y/M	1 y	Right tibia, right knee (2)	Large	Pain, hyperhidrosis	Excision
16	Archer[12]	30 y/M	NA	Trunk, lower extremities, abdomen, buttocks, genitals (multiple)	0.5	None	NA
17	Lee et al[13]	29 y/F	Since birth	Chest, left arm (multiple)	NA	Hyperhidrosis	Laser
18		22 y/M	Since birth	Chest, right shoulder (multiple)	NA	Pain	Laser
19	Sanmartin et al[14]	3 mo/F	Since birth	Right first toe (1)	2	None	Excision
20	Kwon et al[15]	50 y/M	Since birth	Left chest (1)	8×5	Hyperhidrosis	NA
21	Smith et al[16]	7 mo/F	4 mo	Left first toe (1)	NA	Hyperhidrosis, slowly growing	Excision

Table 1. (continued)

Case	Reference	Age/ Sex	Duration	Site (No. of Lesions)	Size, cm	Symptoms	Treatment
22		22 mo/F	Since birth	Left fifth toe (1)	NA	NA	Excision
23		8 y/M	2 y	Left fifth finger (1)	1	None, slowly growing	Excision
24	Calderone et al[17]	2 mo/M	Since birth	Left thigh (1)	2	None	Excision
25	Nakatsui et al[18]	18 wk/M	Since birth	Left wrist (1)	3	Hyperhidrosis	None
26	Torres et al[19]	13 y/F	Since birth	Left buttock (1)	NA	None	NA
27	Kikuchi et al[20]	3 y/M	Since birth	Right sole (1)	2	Pain, hyperhidrosis	Excision
28	Velasco and Almeida[21]	3 y/M	Since birth	Right knee (1)	3	Pain	NA
29	Pelle et al[22]	8 y/F	6 y	Left knee (1)	1.5	Pain	Excision
30		1 y/M	Since birth	Left ankle (1)	1×1	Pain	Excision
31		9 mo/M	Since birth	Right arm (1)	1×2.5	None	None
32		15 y/F	2 y	Right ankle (1)	4×4	Pain	None
33	Tanaka et al[23]	39 y/F	Since childhood	Right fifth finger (1)	1.4×2.1	Pain, hyperhidrosis	Excision
34	Nair and Kurien[24]	9 y/F	5 y	Right upper chest, neck, supraclavicular (3)	3×3, 3×1	None	NA
35	Diaz-Landeata and Kerdel[25]	4 y/M	Since birth	Left thigh (1)	4×2	Tender, secretion of clear fluid	NA
36	Nakayama et al[26]	49 y/F	16 y	Sacral region (1)	5×2.5	Pain	Excision
37	Challa and Jona[27]	10 y/F	NA	Right wrist (1)	1	Pain	Excision
38	Wolf et al[28]	39 y/M	1 mo	Right foot (1)	2	Pain	Naproxen, diclofenac, & ENS for pain
39	Donati et al[29]	52 y/F	6 mo	Right hand (1)	1×1.5	None	Excision
40	Laeng et al[30]	65 y/M	10 y	Left leg (1)	15×10	Hyperhidrosis	NA
41	Gabrielsen et al[31]	34 y/F	<1 y	Distal left fifth finger (1)	NA	Increasing pain, hyperhidrosis	Amputation after incomplete excision
42	Present case	12 y/F	8 y	Left posterior leg (1)	6×5	Hyperhidrosis	None

*F indicates female; M, male; NA, not available; ENS, electric nerve stimulation.

infiltration of small nerves may be responsible for the pain,[27,28] and a local increase in the temperature within the angioma may produce the sweating seen in the eccrine component of the hamartoma.[3,8,16,27]

The diagnosis of EAH is confirmed by histology because the clinical features of the lesion are nonspecific and variable. Histologically, EAH is characterized by a dermal proliferation of well-differentiated eccrine secretory and ductal elements closely associated with thin-walled angiomatous channels. In addition to these defining elements, unusual histopathologic variants have been reported and include the infiltration of adipose tissue,[11,16,29] the presence of pilar structures,[6,9,11,21] apocrine glands,[8] and, as in our case, increased dermal mucin.[11] The epidermis typically is unremarkable but may exhibit hyperkeratosis, acanthosis, and papillomatosis.[5,6] Immunohistochemical analyses using carcinoembryonic antigen and S-100 have demonstrated no difference between normal eccrine glands and those found in the hamartoma.[8,10,16] In addition, ulex europaeus, CD34, CD44, and factor VIII–related antigens are expressed by the endothelial cells within the vascular component of the lesion.[8,15,16] These findings help support a hamartomatous rather than tumoral origin for EAH. In addition, cytologic atypia and mitotic figures have not been reported.[9,29]

Imaging modalities, such as magnetic resonance imaging and ultrasound, are beginning to be used in the evaluation of EAH. One group of investigators reports that ultrasonography of a biopsy-proven EAH revealed varicose veins in cutaneous and subcutaneous layers but could not determine the size or shape of the lesion.[30] Now, radiographic imaging may help confirm the clinical suspicion of an angiomatous lesion, but accurate diagnosis of EAH remains with histology.

The etiology of EAH has not been delineated clearly. Zeller and Goldman[6] report that the hamartoma may be caused by abnormal induction of heterotypic dependency during organogenesis. According to this model, altered chemical interactions between the differentiating epithelium and mesenchyme result in the hamartomatous growth of these elements, generating an abnormal proliferation of vascular and eccrine structures.

The differential diagnosis of EAH includes eccrine nevus,[32] a rare lesion composed of mature eccrine glands capable of producing localized hyperhidrosis. In addition, localized hyperhidrosis may be seen in a variety of other conditions, including neuritis, myelitis, syringomyelia, general paresis, and tabes dorsalis.[32] However, these conditions do not produce cutaneous lesions or histologic abnormalities of eccrine glands. Localized hyperhidrosis also may accompany the blue rubber-bleb nevus syndrome, but histology may distinguish EAH from this disorder. Likewise, EAH clinically may resemble tufted angioma, macular telangiectatic mastocytosis, nevus flammeus, glomus tumor, and smooth muscle hamartoma.[9,22,25] These conditions are readily differentiated by histologic analysis.

EAH is a benign and typically slow-growing lesion, though a rapid increase in size was noted in one pregnant woman, indicating that it may be under hormonal influence.[31] In this case, partial amputation of the involved finger was necessary to relieve the patient's intractable pain. In general, however, aggressive treatment of EAH is unwarranted. Simple excision usually is curative and reserved for painful or cosmetically unacceptable

Table 2.

Clinical Features of the Reported Cases of Eccrine Angiomatous Hamartoma (N=42)[2-32]

Congenital,* No. (%)	18 (45.0)
Age in noncongenital cases	
Mean	21.3 y
Range	2 mo–73 y
Gender	
Male, No. (%)	20 (47.6)
Female, No. (%)	22 (52.4)
Male-female ratio	1:1.1
No. of lesions, No. (%)	
Single	31 (73.8)
Multiple	11 (26.2)
Location of lesions, No. (%)	
Limited to extremities	31 (73.8)
Limited to trunk	5 (11.9)
Extremities and trunk or neck	6 (14.3)
Symptoms,† No. (%)	
Pain	17 (41.5)
Hyperhidrosis	13 (31.7)
Pain and hyperhidrosis	7 (17.1)

*Information not provided in references 12 and 27; N=40.
†Information not provided in reference 16; N=41.

lesions. One study reports no evidence of recurrent disease 15 months after excision.[17] Indeed, the pain associated with EAH may remit spontaneously without treatment, even after several years.[28]

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