

A Case of Venous Hemangioma Occuring on The Interdigital Web

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We present a case of venous hemangioma which is seen beneath a clavus (corn) developed in the interdigital area of the foot. Clinically, a violaceous papule was located on the third and fourth interdigital spaces under an overlying corn. Histopathologic examination showed a non-encapsulated dermal mass composed of thick-walled and thin-walled vessels lined by a single layer of endothelial cells. Some thick-walled vessels had protruding endothelial cells into the lumen and through Verhoeff-van Gieson and Masson-trichrome stain of the tissue section, we found that the vascular mass was composed of vein. (*Ann Dermatol* 5:(2) 86-89, 1993)

Key Words: Corn, Venous hemangioma

The venous hemangioma is a vascular tumor that was first described by Biberstein and Jessner under the term "cirroid aneurysm."¹ Because it is benign and rarely biopsied, it is also rarely reported. There are discrepancies in opinions regarding the characteristics of proliferating vascular structures and pathogenetic mechanisms from various authors. Thus, the tumor has been reported by such diverse names as; "cirroid aneurysm"¹, "arteriovenous hemangioma"², acral arteriovenous tumor"³ and "venous hemangioma"^{4,5} according to the author's opinions of its histogenesis. In the presented case, the unusualness of the site of involvement, the interdigital web and the fact that it was accompanied by a corn are, we believe, the first reported in literature.

We may assume that the pressure (trauma) sufficient to develop a corn might play an important role in the pathogenesis of this case.

REPORT OF A CASE

A 39-year-old Korean male visited us for evaluation of a solitary, painful, hard nodule on the third and fourth interdigital web of the right foot. The lesion started to develop three years ago and intermittent deep pain was noted when he walked heavily.

We diagnosed this lesion as a corn and planned to treat it with the application of salicylic acid plaster. After shaving the margin, we found a violet-colored, circumscribed area under the hyperkeratotic surface. An excisional biopsy, including the pigmented lesion, was performed and the histopathologic examination revealed a well circumscribed depression of the horny layer which had alternative parakeratotic columns with depletion of the granular layer (Fig. 1). These epidermal findings are consistent with that of a corn, which is not commonly illustrated. In the middle and deep dermis, a noncapsulated mass of vascular structures composed of many thick-walled and thin-walled vessels was found under the corn (Fig. 2). On high power view, the proliferating vessels were lined by a single layer of endothelial cells, and some endothelial cells in thick-walled vessels

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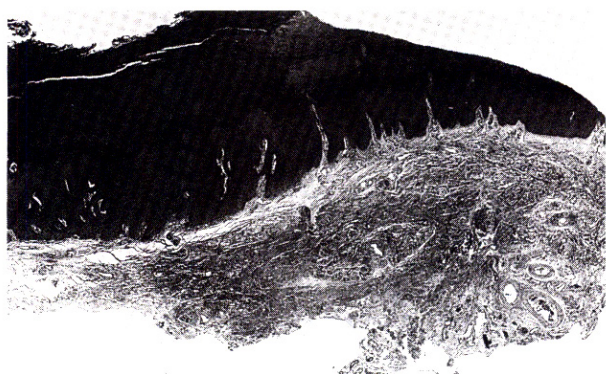


Fig. 1. Histopathologic findings of the corn: well circumscribed depression of stratum corneum which contains alternating parakeratotic columns with depletion of granular layer (H&E stain, $\times 10$).

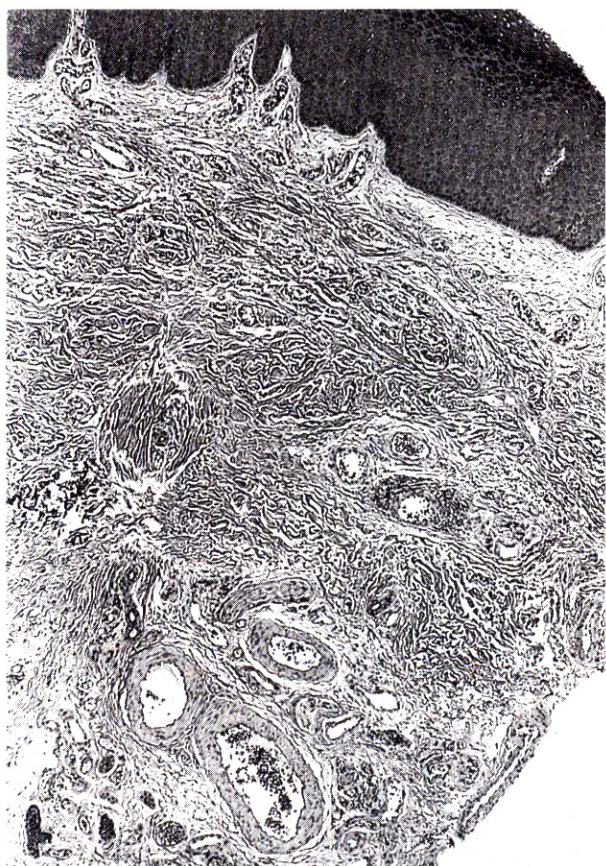


Fig. 2. In the mid and deep dermis, an aggregated vascular mass which is composed of thick walled and thin walled vessels is seen (H&E stain, $\times 40$).

were seen protruding into the lumen (Fig. 3).

Masson's trichrome stain showed that sparse amounts of smooth muscle were diffusely embedded in the horizontally arranged muscle fibers (Fig. 4a). Verhoeff-van Gieson stain showed that

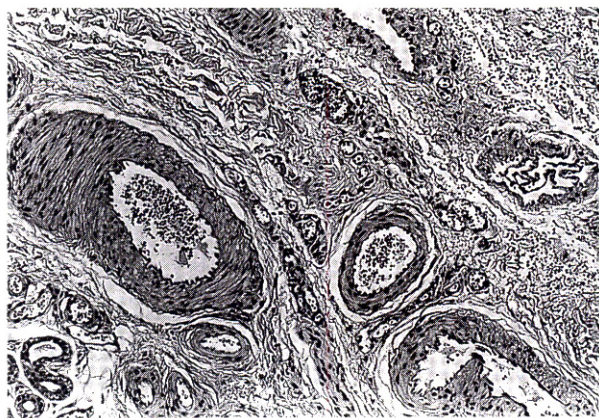


Fig. 3. High magnification of tumor vessels: plump endothelial cells protrude into the vessel lumina (H&E stain, $\times 100$).

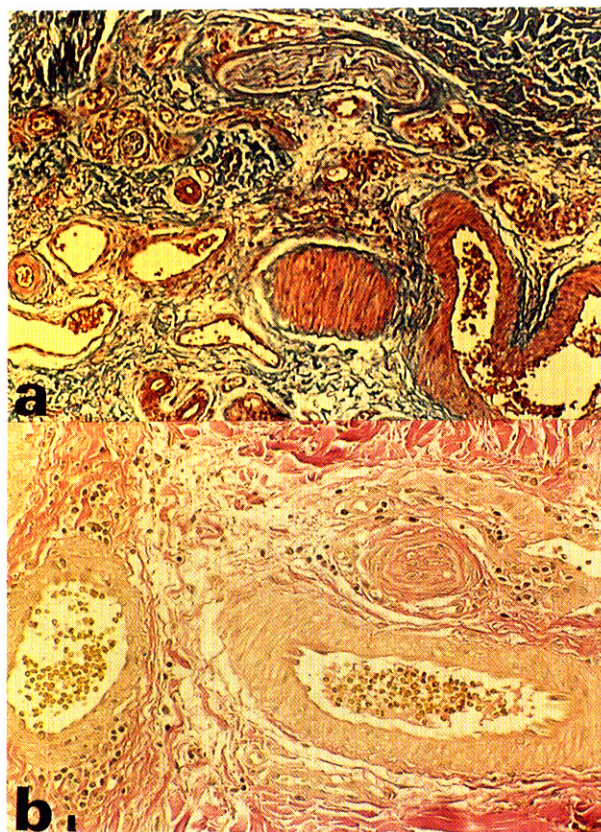


Fig. 4a. The thick wall of a large vessel consists of fibromuscular structure but no elastic tissue (Masson-trichrome stain, $\times 100$).

Fig. 4b. There are no internal elastic lamina and sparse elastic fibers in the wall of the vessel (Verhoeff-van Gieson stain, $\times 200$).

In situ DNA hybridization was performed for the walls of the vessels had no elastic lamina or elastic fibers in the muscle layer (Fig. 4b).

Two weeks later, the lesion was completely treated with electrocoagulation and has not

recurred in the following five months.

DISCUSSION

Clinically, venous hemangioma is a solitary vascular papule with a long evolution without enlargement, bleeding, or ulceration². Usually the lesion is located on the face or extremities of a middle-aged or elderly patient⁴⁶. Although the vascular nature is apparent in a majority of cases, it is sometimes clinically misdiagnosed as an other tumor, such as basal cell epithelioma, nevus, or granuloma pyogenicum⁴.

However, its histopathologic features are distinctively characteristic and can be distinguished from other vascular tumors. The lesion develops as a circumscribed growth of blood vessels lined by a single layer of endothelial cells in the superficial and mid-dermis. The walls of the thick-walled vessels consist mainly of fibrous tissue but also, in most instances, contain some smooth muscle⁴. The precise histogenesis of the proliferation of vessels is speculative. In 1956, Biberstein and Jessner¹, the first describers, used the expression "cirroid aneurysm" to represent a distinct vascular tumor occurring on the cheek of a 54-year-old man. They believed that the tumor was an aneurysmal formation, mainly of arterial origin and possibly related to trauma. But Girard et al² described this tumor as "arteriovenous hemangioma" because of the evidence of direct communication between arteries and veins in one-fourth of their cases. In 1977, Carapeto et al³ believed that this tumor might ultimately be considered the true glomus tumor or at least a glomus hamartoma. The theory of glomus origin was based on the acral location and existence of transitional channels resembling the Suquet-Hoyer canal of the glomus. But no typical glomus cells, no nerve compartment, and different patterns of the arrangement of smooth muscles dispute the theory of glomus origin. Connelly and Winkelmann⁴ suggested that these lesions most likely are fibromuscular channels between arterial and venous vessels, not the Suquet-Hoyer canal.

The term "venous hemangioma", specifically, the superficial form of venous hemangioma⁷ was coined by some authors⁴ who had considered a

venous origin for all proliferative vessels. When we reviewed this case, in which blood vessels with unusually thick walls were seen beneath a clavus (corn) developed in the interdigital area of the foot, several explanations, of variable constructions, were suggested that some cross sections of thick walled vessels represent a single vessel that pursues an extremely tortuous course. Also, the histologic features: 1) a very thick tunica media (smooth muscle layer), 2) a lack of elastic tissue, 3) the characteristic location of the vessels between the reticular dermis and fatty tissue, of the foot's skin, led us to speculate another possibility that the vessels represent arteriovenous anastomosis (AVA) without pathologic alternation. In addition, negative reactions to the special staining for smooth muscle cells are also the characteristics of so called "ramified" smooth muscle cells of AVA. Based on the points mentioned above, we cannot exclude the possibility that the lesion is not a hemangioma but only AVA with inflammation to some extent. However, repeated serial sectioned specimens and different directions of the lesion revealed that it's not a single tortuous vessel. Also, the results of special staining, either Masson and van Gieson, led us to exclude the possibility of AVA because of the negative staining of the arterial component and the lack of evidence of an arteriovenous connection (Fig. 4a,b).

Based on these features, we concluded the vascular lesion was a venous hemangioma. And we assume that this unusual location, accompanied by a corn, suggests the possibility that reactive hyperplastic change of vessels due to pressure sufficient to develop a corn might play an important role in the histogenesis of the presented case.

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