

Radiologic Findings of an Angioleiomyoma of the Finger: A Case Report¹

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Angioleiomyomas are a rare benign smooth muscle tumor arising from vessel walls. Although angioleiomyomas are most frequently reported in the lower extremities and in middle-aged female patients, they can be found throughout the body in male and female adults of all ages. We report a rare case of an angioleiomyoma of the left 3rd digit in a 31-year-old man, which appeared as a small, well defined mass with multiple vascular structures on Doppler sonogram and MRI. The tumor was diagnosed by pathology as an angioleiomyoma. Although angioleiomyomas are relatively infrequent, they should be considered in the differential diagnosis when multiple tortuous vascular structures are seen within a well demarcated mass in extremities on Doppler sonogram and MRI.

Index words : Leiomyoma

Soft Tissue Neoplasms

Extremities

Ultrasonography

Magnetic Resonance Imaging

Angioleiomyomas are a benign soft tissue tumor arising from smooth muscle cells of blood vessels. It is also known as an angioioma, vascular leiomyoma or dermal angioioma. This tumor is relatively rare and typically presents as a small (maximum diameter < 2 cm), freely movable, painful mass (1, 2). Although angioleiomyomas are most frequently reported in the lower extremity and in middle-aged female patients, they can be

found throughout the body in male and female adults of all ages. We report a case of an angioleiomyoma of the left 3rd digit in a 31-year-old man.

Case Report

A 31-year-old man presented with a progressive enlarged palpable mass at the left 3rd finger. He reported that the mass was palpable for about 2 years, and progressively increased in size. The man did not complain of any pain in the area. Upon physical examination, we discovered a soft, movable non-tender mass measuring approximately 3 × 2 cm and with a volar aspect of the proximal phalanx of left 3rd finger. Range of motion of the left 3rd finger was intact, though plain radiography demonstrated soft tissue swelling at the volar aspect of the left 3rd proximal phalanx without any bony abnor-

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malities. Sonography revealed a solid, oval and well defined mass about 2.5 cm in diameter. The mass was located just above the flexor tendon, but did not appear to be attached to the tendon. The mass showed a relatively heterogeneous, hypoechoic echo texture with posterior acoustic enhancement (Figs. 1A, B). Color Doppler eval-

uation revealed multiple vascular channels within the mass (Fig. 1C). On MRI, the mass showed homogeneous iso-signal intensity on T1 weighted image and heterogeneous high signal intensity with a thin low signal capsule on a T2 weighted image, and multiple serpentine or linear low signal structures (Figs. 2A, B). The mass

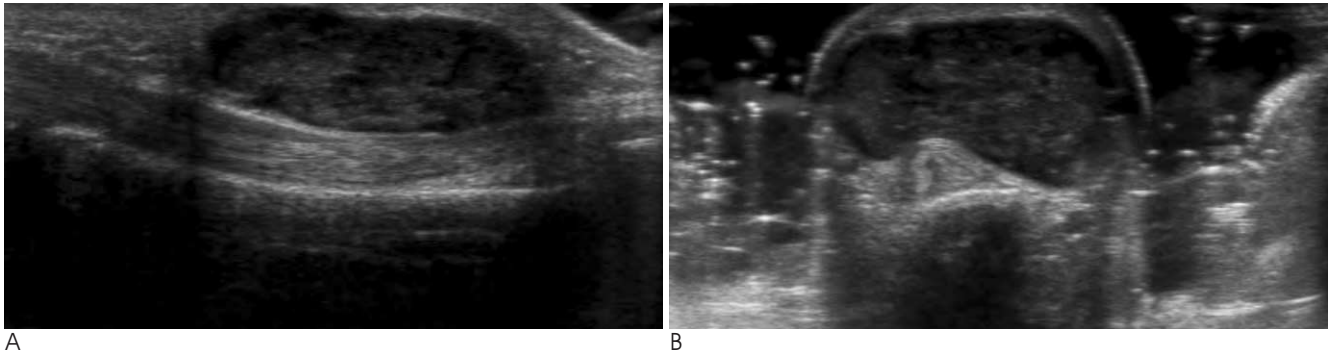


Fig. 1. Longitudinal (A) and transverse (B) gray scale sonograms show a well defined heterogeneous low echoic mass just above the flexor tendon of the 3rd finger. Power Doppler sonogram (C) demonstrates multiple vascular channels within the tumor.

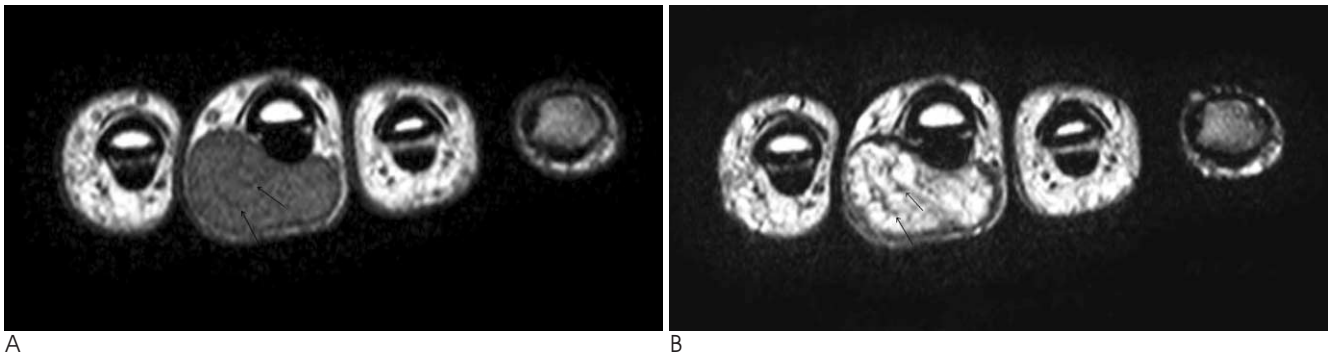
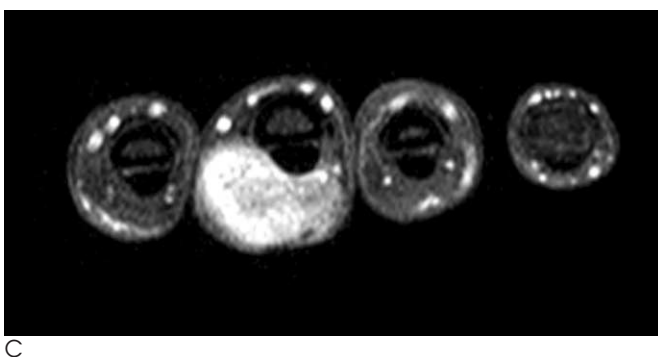


Fig. 2. The axial T1 weighted (A) and T2 weighted (B) images demonstrate well defined a mass with a thin capsule; curvilinear low signal structures are also noted within the mass (arrows in A and B). Gadolinium-enhanced T1 weighted image (C) demonstrate strong enhancement, especially peripherally.



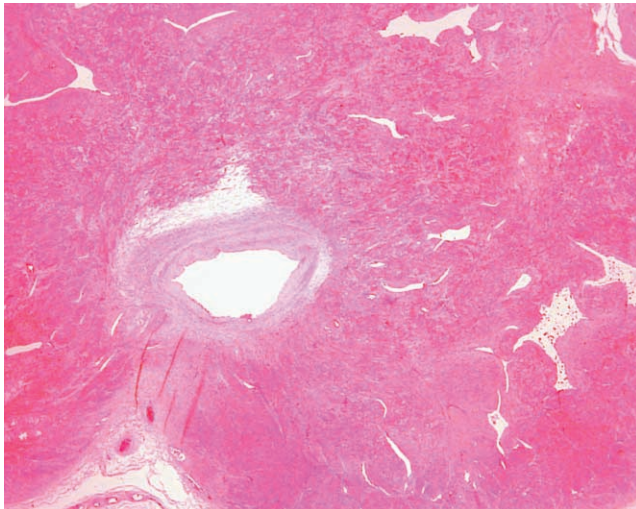


Fig. 3. Photomicroscopic image (H & E ×10) demonstrates compact smooth muscle cells surrounding the vessel wall. Multiple small sized split-like vascular channels are also noted.

showed strong enhancement, especially peripherally on the gadolinium enhanced T1 weighted image (Fig. 2C).

A tumor resection was performed, and a well circumscribed mass was identified in the subcutaneous tissue and over the flexor tendon of the 3rd digit. No invasion of the adjacent tendon was present and upon microscopic examination, the mass was demarcated by a fibrous thin capsule, and showed multiple tortuous small sized vessels surrounded by compact smooth muscle cells with dense fibrosclerotic tissue (Fig. 3). The pathologic diagnosis was a solid type angioleiomyoma.

Discussion

Angioleiomyomas are a rare form of leiomyoma. Leiomyomas are a benign smooth muscle neoplasm that frequently occurs in extraskelatal sites such as the ovaries, uterus, bladder, lung, and gastrointestinal tract. Occasionally, the skin and subcutaneous soft tissues are involved, as in cases of angioleiomyoma arising from the smooth muscle of small blood vessels.

Angioleiomyomas are sharply demarcated spherical masses, mostly measuring less than 2 cm in diameter (1, 2). The peak incidence is in the fourth to sixth decades of life (1). The lower extremity tumors occur in women twice as frequently as in men, and the upper extremity tumors occur more frequently in men than in women (1). Pain is experienced more often in tumors located in the lower extremity than in an upper extremity, the head or neck (1, 2).

Angioleiomyomas are classified into three histological

types: solid, venous and cavernous (3). Solid angioleiomyomas, described as closely compact smooth muscle and many small split-like vascular channels, occur three times more in females than males and are generally the most common type. Venous angioleiomyomas, described as having thick and easily identifiable muscular walls, occur more commonly in males. Cavernous angioleiomyomas, described as having dilated vascular channels with less smooth muscle cells, are the least common type. Although angioleiomyomas are classified into three main types on pathologic examination, the MRI features are similar to differentiate among the three types of angioleiomyomas (4).

Several studies have reported about the correlation between pathology and MR findings. Hwang et al. (4) suggested that the smooth muscle and numerous vessels corresponded to the hyperintense areas, and the fibrous tissue appeared isointense on T2 weighted MR images. In addition, a well defined peripheral, hypointense rim on T2 weighted images showed fibrous capsule and the interlacing isointense areas within the tumor, which were correlated with the various amounts of connective tissue and intravascular thrombus. Yoo et al. (5) suggested that the presence of tortuous vascular channels surrounded by smooth muscle bundles and areas of myxoid change explains the heterogenicity of signal intensity in the tumor on T2 weighted images. Some tumors showed predominant myxoid change and hyalization corresponding more so to the higher signal intensity on T2 weighted image than the remaining part of mass. On gadolinium-enhanced T1 weighted images, most of the tumors showed homogeneous high enhancement; however, some only showed peripheral enhancement, which reflected the fewer vessels in the tumor tissue (5). One case report of MRI findings described tortuous vascular channels surrounded by smooth muscle bundles that corresponded to tortuous low signal intensity on T1 and T2 weighted images, which was consistent with the diagnosis of angioleiomyoma (6).

In our case, the mass showed multiple vascular structures on Doppler sonography, and serpentine or curvilinear low signal intensity structures that were thought to be tortuous vascular channels seen on T1 and T2 weighted images. Upon microscopic examination, the low signal intensity rim on T2 weighted image was found to be well correlated with fibrous capsule and the heterogenicity on a T2 weighted image corresponded to multiple vascular channels and dense fibrosclerotic tissues.

The differential diagnosis may include giant cell tumors of the tendon sheath, neurogenic tumor, and hemangioma. Compared to an angioleiomyoma, a giant cell tumor of the tendon sheath frequently shows low signal intensity on T2 weighted images and an intimate relationship with the tendon sheath. Neurogenic tumors usually present as well demarcated masses of high signal intensity on T2 weighted images, but do not show tortuous vascular structure. Hemangiomas can also at times show tortuous vascular channels and well defined nodular appearance, but usually show a lobulated contour, infiltrative margin, and relatively high signal intensity on T1 weighted images due to the fatty component within the mass (7). Internal calcification and saccular vascular structure with or without thrombosis are also helpful for differential diagnosis (7).

In conclusion, we suggest that the angioleiomyoma be considered when multiple vascular structures are noted in a well defined soft tissue mass arising from the subcutaneous tissue of the extremities on MRI and Doppler

sonography.

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손가락에서 발생한 맥관평활근종의 영상의학적 소견: 증례 보고¹

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맥관평활근종은 혈관 벽에서 발생하는 드문 양성 종양이다. 이 종양은 중년 여성의 하지에서 많이 발생하는 것으로 알려져 있지만, 나이나 부위에 관계없이 어디에서든 발생할 수 있다. 저자들은 31세 남자 환자의 왼쪽 중지 발생한 맥관평활근종의 증례에 대해 보고하고자 한다. 본 증례에서는 도플러초음파와 자기공명영상에서 경계가 좋은 종괴와 그 내부로 다수의 혈관 구조물들을 볼 수 있었으며, 병리 결과에서 맥관평활근종으로 진단되었다. 비록 맥관평활근종이 비교적 드문 종양이기는 하지만, 도플러초음파나 자기공명영상에서 사지에 경계가 좋은 종괴와 사행성의 혈관 구조물들이 내부에 보일 때 그 가능성을 반드시 고려해야 한다.