LETTER / Musculoskeletal imaging

MR imaging findings of superficial venous aneurysm of the hand

Keywords  Color Doppler; Hand; Tumor-like lesion; Ultrasonography; Venous aneurysm

Dear Editor,

Venous aneurysm of the hand and wrist has been scarcely reported. This condition can have misleading appearance because it may present as a tumor. We report a case of a thrombosed superficial venous aneurysm of the finger, initially diagnosed by ultrasonography and further confirmed by magnetic resonance imaging (MRI).

A 37-year-old man, with a history of overweight and tophaceous gout, had an ultrasound examination to assess a painless and movable mass on the dorsal and ulnar side of the left index finger, at the level of the proximal phalanx. This swelling appeared spontaneously three years before with gradual evolution, without any trauma or puncture, and limited his daily activities. Radiographs showed no tophus or calcification. Ultrasonography showed a well-delineated mass measuring 2 cm in diameter, without contact with tendons. The mass was predominantly isoechoic, avascular and incompressible. Its peripheral crescent-shaped component was anechoic, compressible, with internal flow connecting with a patent superficial vein of the index (Fig. 1).

Figure 1. Color Doppler ultrasonography shows thrombosed aneurysm (asterisk) communicating with a displaced superficial vein (arrows) through a wall defect (arrowheads).

Figure 2. Magnetic resonance imaging of the hand. a: T2-weighted MR image in the transverse plane shows a mass in the dorsal and ulnar side of the finger containing a heterogeneous, hypointense thrombus (asterisk) and hyperintense circulating portion (arrow); b: fat-suppressed T1-weighted MR image in the sagittal plane obtained after intravenous administration of a gadolinium chelate shows unenhanced mass corresponding to the thrombus (arrow) in close contact with a superficial vein of the finger (arrowheads).
No communication with the arterial network was seen. These findings suggested thrombosed superficial venous aneurysm of the finger. MRI revealed a mass contiguous to a superficial vein of the finger. The thrombus was heterogeneous and hypointense on T1- and T2-weighted images, and no enhancement after intravenous administration of a gadolinium chelate. The circulating portion of the aneurysm had a low signal on T1-weighted images and a high signal on T2-weighted images with partial enhancement (Fig. 2). "En bloc" resection of the mass was performed with proximal vein ligation and distal vein coagulation (Fig. 3). Histopathological analysis confirmed a thrombosed venous aneurysm, with a thin layer of intimal endothelial cells, a very thin media in some areas, and mild inflammation of adventitial connective tissues (Fig. 4). Postoperative course was uneventful.

A venous aneurysm is a solitary saccular venous dilatation, communicating with a main vein structure by a single channel, without arteriovenous communication or association with varicose veins. It can be primary or secondary to a trauma or an infection [1]. It is made of three wall layers similar to a vein, in contrast to a pseudoaneurysm [2]. Location on the upper limb is rare, with only one case reported on the hand [3]. Development of these aneurysms could be explained by a loss of muscle cells and elastic tissue, due to age or congenital hypertrophy, substituted by fibrous tissue, causing a parietal weakness and susceptibility to expansion [1]. Most often asymptomatic, superficial venous aneurysms may look like a compressible bluish swelling, without pulsation or noise, which decrease in size by raising the arm if they are located on the upper limb. Diagnosis is more difficult when associated thrombus is present, because they become incompressible. Complications include pain or cosmetic issues and may require surgery [3,4]. Pulmonary embolism may occur with deep venous aneurysms, but one case has been reported with a superficial venous aneurysm of the forearm [4]. Ultrasonography with color Doppler is the first imaging modality to assess a hand tumor. It can easily make the diagnosis of venous aneurysm, by showing presence of vascular flow inside and communication with the vein [4]. MRI is useful for the assessment of larger lesions; MR angiography shows relationships with adjacent vascular structures [5]. The main differential diagnosis consists in ganglion cyst and giant cell tumor of tendon sheath. However, ganglion cyst has no flow and giant cell tumor is in close contact with flexor tendon [5]. Vascular malformation is rather a serpiginous mass of dilated vessels, which can be thrombosed in case of venous malformation, and with a turbulent arterial flow in case of arteriovenous malformation [6].

Disclosure of interest
The authors declare that they have no competing interest.

References

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Figure 3. Photograph shows intraoperative view. Surgery reveals presence of a well-circumscribed bluish mass with thin wall.

Figure 4. Photograph shows HES-stained histological section. The lesion has a continuous venous wall that is very thin in some places (arrowheads) and its lumen is distended by a fibrinocrucic thrombus (asterisk).