Aneurysm of the lateral marginal vein of the foot

Ilaria Massi, Roberta Ricci, Francesca Alesiani

School of Vascular Surgery, Chairman Paolo Zamboni, University Hospital of Ferrara, Cona (FE), Italy

Abstract

Superficial venous aneurysms are a very rare pathology. This case report describes a 21-years-old male patient, who developed a soft, slow-growing mass, in the lateral part of the dorsal foot. Based on clinical examination and EcocolorDoppler ultrasound exam, the diagnosis of venous aneurysm of the lateral marginal vein was confirmed. The treatment proposed was ultrasound-guided foam sclerotherapy. The purpose of this work is to describe for the first time a venous superficial aneurysm localized in the lateral marginal vein of the foot. It is the first case reported in English literature.

Introduction

A venous aneurysm is a solitary and localized dilatation of a vein that forms an aneurysmatic sac where the diameter is three times the size of the non-pathologic vein and two times the size of the contiguous vein. It is a rare disease and the literature about venous aneurysms is limited.[1,2]

A venous aneurysm can be differentiated in primary and secondary, according to etiology. Primary venous aneurysms, which are a rare occurrence, have no clear etiology. It can be caused by a congenital weakness of the vessel wall or by degenerative changes.[3] Some conditions, like pregnancy, increase their incidence.[4] The UIP Consensus Conference defines primary venous aneurysms as truncular venous malformations, resulting from developmental problems of the vascular trunk formation during the fetal phase. These masses are considered primary when they are found in the absence of any hemodynamic modification, heart disease, trauma, arteriovenous fistulas (AVF), or other morbidities. The risk of recurrence is minimal because there aren't angioblasts in this type of lesion.[5-8]

On the contrary, secondary venous aneurysms derive from hemodynamic overloads leading to progressive dilation of the venous wall. The most common causes of secondary venous aneurysms are all the situations that determine an increased pressure in the venous system, such as arteriovenous fistula, or varicose veins, characterized by venous reflux, high reverse flow velocity and turbulences within the saphenous territory. It can also occur due to trauma, inflammation, infection, or degenerative change in the vessel wall.[1,3,6,9-10]

A venous aneurysm can also be classified as belonging to the superficial or deep vein system. The first one is associated with lower prevalence and fewer complications, such as thromboembolic events; its incidence is around 0,1%. In most cases, superficial venous aneurysms in the lower limb interest the proximal tract of the great saphenous vein.[9,11]

Calligaro *et al.*[12] suggest a conservative approach except for disfiguring lesions, while Khodarami *et al.*[11] suggest an indication for treatment when the lesion is symptomatic because superficial venous aneurysms of the lower limbs rarely cause complications, contrary to deep vein aneurysms.

We present a case of a primary aneurysm of the lateral marginal vein of the foot in a 21 years-old man. The patient is also a basketball player, so we can't exclude a previous trauma connected to the genesis of this superficial aneurysm. It could also be a secondary lesion due to repeated trauma. In fact, there are in the literature some cases of superficial venous aneurysms due to traumas, like multiple injections in the arm veins, venous cannulations, and sports traumas like in volleyball players.[13]

Case Report

A 21-years-old man presented a truncular neoformation located on the lateral part of the dorsal surface of the left foot. This mass was noticed for the first time about three years before the clinical visit and it had had a slow growth over the years. It was asymptomatic. The patient reported mild pain only in case of traumas during sport activity.

During the physical examination in the supine position, the mass was easily compressible, and it was non-pulsatile, excluding in this way the possibility of an arteriovenous malformation or arterial aneurysm. After the elevation of the left lower limb, we noted that it decreased in size, suspecting that it could be a superficial venous aneurysm not thrombosed (Figure 1A-B).

The diagnosis of the venous aneurysm was confirmed by an ecocolorDoppler exam performed with a 13 Hz ultrasound probe and with a water pocket of gel over the mass.

There was not a pulsatile nor turbulent flow, so the exam did not show a typical pattern of MAV or AV fistula.

In fact, this exam showed a venous aneurysm of the lateral marginal vein of the foot with no thrombosed blood content, which measures 4.18x1.34 cm (Figure 1C).

The treatment proposed was sclerosant therapy ultrasound-guided with aethoxyscerol 2% (Kreussler Pharma, Chemische Fabrik Kreussler & Co, Wiesbaden, Germany), which showed an excellent technical result with an immediate reduction of the mass to 0.2x0.5 cm (Figure 2). Then, a first-class elastic stocking was prescribed, in according with the most recent Italian guidelines which recommended a compression stocking of almost 15-21 mmHg.[14]

After a week the patient came again for

Correspondence: Ilaria Massi, School of Vascular Surgery, Chairman Paolo Zamboni, University Hospital of Ferrara, Cona (FE), Italy.
E-mail: ilaria.massi@edu.unife.it.

Key words: Venous aneurysm; sclerotherapy; marginal vein of the foot; primary venous aneurysm.

Contributions: All the authors made a substantive intellectual contribution, performed part of the experiments. All the authors have read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of interest: The authors declare no potential conflict of interest.

Funding: None.

Availability of data and materials: All data generated or analyzed during this study are included in this published article.

Received for publication: 1 May 2022.
Accepted for publication: 4 July 2022.

Veins and Lymphatics 2022; 11:10584
doi:10.4081/vl.2022.10584

a clinic visit and he reported mild pain on the lateral part of the dorsal surface of the foot. During the physical examination, we noticed a re-growth of the mass and an erythematous skin above it; the ecocolorDoppler exam confirmed thrombosis of the residue aneurysmatic sac. Under local anesthesia, we performed a short incision of about 1 cm over the mass to perform a Tournaix thrombectomy.

A month later, we did an ecocolorDoppler exam again to control the correct sclerotization of the residue aneurysmatic sac. The diameters were 2.16x0.99 cm (Figure 3).

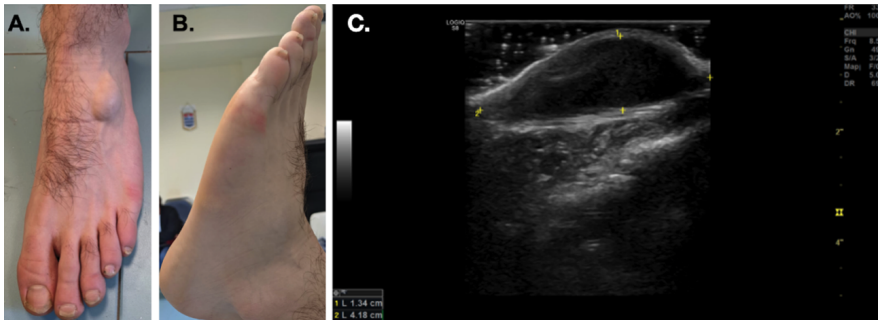

Figure 1. A. Venous aneurysm of the marginal lateral vein of the foot in a 21-years-old male patient in orthostatic position. B. After the elevation of the limb, the mass is reduced in size. C. Venous aneurysm of the lateral marginal vein viewed by ecocolorDoppler exam.

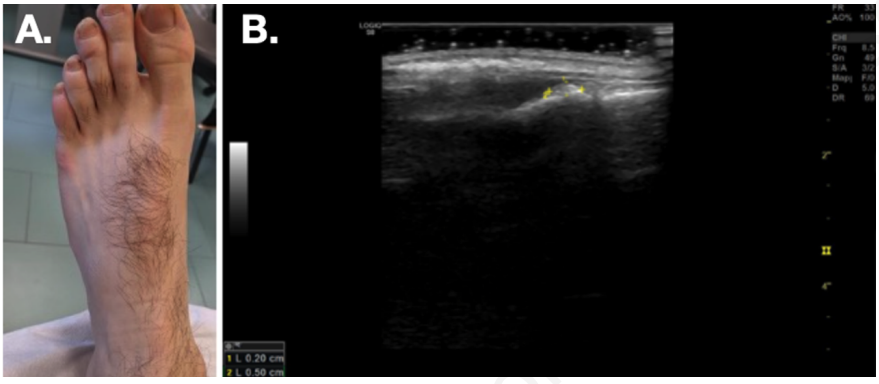

Figure 2. A. Venous aneurysm of the lateral marginal vein after foam sclerotherapy. B. Venous aneurysm of the lateral marginal vein viewed by ecocolorDoppler exam after foam sclerotherapy.

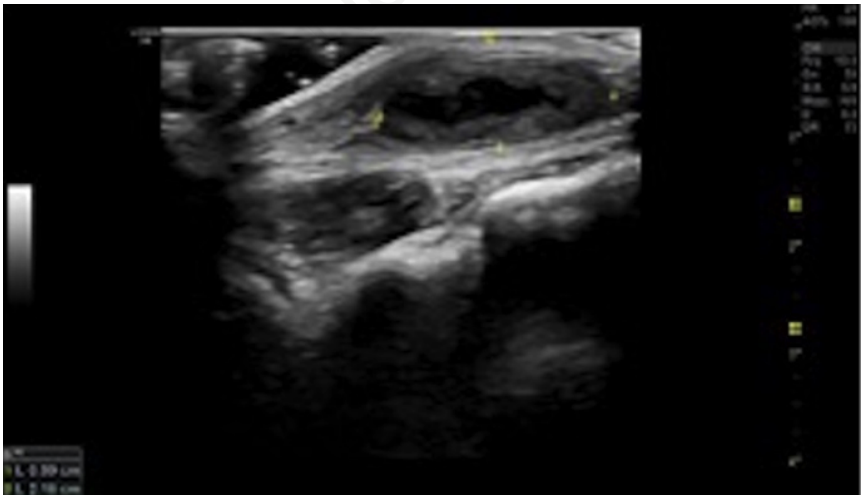

Figure 3. Venous aneurysm of the lateral marginal vein viewed by ecocolorDoppler exam one month after foam sclerotherapy.

Discussion

The patient of this case report presents a venous superficial aneurysm localized in the lateral marginal vein of the foot. It is the first case reported in English literature. In fact, there are very few cases in the literature that describe venous superficial aneurysms in the lower limbs, but none localized in the lateral marginal vein of the foot.

Superficial venous aneurysms are rare and can be misdiagnosed or confused with other pathologies like subcutaneous soft-tissue tumors such as lipoma, varicose veins, hemangiomas of infancy, venous malformations, arteriovenous malformations, lymphatic malformations, and hernias.[1-4,10] Therefore, doing a correct differential diagnosis in case of a soft or tough mass in the lower limb is important. In case of superficial venous aneurysms, during the anamnesis, patients describe an asymptomatic mass, that grows over time in months or years. For a correct differential diagnosis, the main tools we have are physical examination and Doppler ultrasound exam.

The physical examination conducted in orthostatic and supine positions shows soft, compressible, and non-pulsatile mass. After the diagnostic maneuver of elevation of the leg with the patient in the supine position, the mass becomes smaller. In this case, the maneuver is positive and it indicates a venous dilatation, in particular, venous dilatation without thrombosis.

An event that can occur is the thrombosis of the aneurysmatic sac. It determines a non-compressible mass that keeps the same size after the elevation of the leg too. This situation can easily lead to a misdiagnosis. The physical examination is enough to get the basis of a correct diagnosis, but we can have diagnostic confirmation with a non-invasive instrumental exam like ecocolorDoppler.[4,13] With the B-mode modality and with Doppler set this exam can show the aneurysmatic sac in continuity with the venous lumen. More invasive exams like magnetic resonance or venography can be useful but not necessary for the diagnosis.[13]

EcocolorDoppler exam is also important for planning the therapeutic approach.[9-11]

Deep venous aneurysms are related to

major complications like pulmonary thromboembolism. Otherwise, the complications of superficial aneurysms are less severe such as thrombosis, severe pain, or aesthetic problems. These represent an indication for treatment.

Reiterating that the treatment of superficial venous aneurysms is not a life-saving treatment, we need to be as less invasive as possible.[9] The treatment depends on the specific location, the distance to the skin and the size of the aneurysm. The surgical approach in case of superficial venous aneurysm is usually a ligation of the afferent vessels and an excision of the aneurysm sac.[10] Rarely is required a more complex technique, such as the interposition of grafting.[13]

A less invasive technique, like the endovascular approach, must be considered as the first-line treatment. Large aneurysms, especially in the saphenous district, can be treated with endovenous laser, radiofrequency, ablation, or foam-sclerotherapy.[9] In this case, sclerosing agents are injected into the venous lumen ultrasound-guided. Actually, the most common method used to perform foam is the Tessari method: in this method, the foam is prepared using a 3-way stopcock and 2 syringes and, with this system, the liquid sclerosant agent is mixed with a part of air.[15]

The result is a sclerosis of the tract of the vein, thanks to important fibrosis. This treatment has shown a good result in our patient. It can be considered a good option because it is less invasive than surgical treatment. The period of convalescence is shorter, and it determines an optimal result.[16] Moreover, we must consider the grade of satisfaction of the patients, especially young patients like in this case. The convalescence period and the aesthetic results conditionate the compliance with the treatment, especially in asymptomatic diseases.

Conclusions

In conclusion, a superficial venous aneurysm of the lower limbs is a rare pathology and it should be a condition to put in the differential diagnosis in case of a mass, soft or tough. The diagnosis is based on the clinic and the ecocolorDoppler exam. The treatment with foam sclerotherapy has shown a good result in our patient. This treatment is less invasive than the surgical technique, with a shorter period of convalescence. This case report describes for the first time a venous superficial aneurysm localized in the lateral marginal vein of the foot. It is the first case reported in English literature. In fact, there are very few cases in the literature that describe venous superficial aneurysms in the lower libs, but anyone localized in the lateral marginal vein of the foot.

References

1. Gabrielli R, Rosati MS, Siani A, Irace L. Management of symptomatic venous aneurysm. Scientific World Journal. 2012;2012:386478.
2. Yılmaz S, Zengin S, Gürgen F, Kızıltan F. An inguinal hernia or a greater saphenous vein aneurysm? A case report. Veins and Lymphatics. 2019;8.
3. Seo SH, Kim MB, Kwon KS, et al. Primary venous aneurysms of the superficial venous system. Angiology. 2008;59:593-8.
4. Casian D, Culiuc V. Primary aneurysm of the medial marginal vein of the foot. Case Rep Vasc Med. 2015;2015: 374691.
5. Zamboni P, Cossu A, Carpanese L, et al. The so-called primary venous aneurysms. Phlebology. 1990;5:45-50.
6. Lee BB, Baumgartner I, Berlien P, et al. Diagnosis and treatment of venous malformations. Consensus Document of the International Union of Phlebology (IUP): updated 2013. Int Angiol. 2015;34:97-149.
7. Lee BB. Marginal vein is not a varicose vein; it is a venous malformation. Veins and Lymphatics. 2014;3:4050.
8. Gianesini S, Menegatti E, Zuolo, et al. Spontaneous thrombosis of primary external jugular veins aneurysms. Veins and Lymphatics. 2014;2.
9. Lee HY, Lee W, Cho YK, et al. Superficial venous aneurysm: reports of 3 cases and literature review. J Ultrasound Med. 2006;25:771-6.
10. Bush RG, Bush P. Aneurysms of the superficial venous system: classification and treatment. Veins and Lymphatics. 2014:3.
11. Khodarahmi I, Alizai H, Adler R. Partially thrombosed aneurysm of the medial marginal vein. J Clin Ultrasound. 2019;47:436-8.
12. Calligaro KD, Ahmad S, Dandora R et al. Venous aneurysms: surgical indications and review of the literature. Surgery. 1995;117:1-6.
13. Sadr AH, Paes TR. Venous aneurysm of the dorsal venous arch: a case with an unusual etiology. J Am Podiatr Med Assoc. 2010;100:143-5.
14. Italian Society of Vascular and Endovascular Surgery (SICVE) and Italian Society of Phlebology (SIF). Phlebo-lymphologic guidelines SICVE-SIF 2016. Minerva Cardioangiologica. 2016;64:1-79.
15. Bunke N, Brown K, Bergan J. Foam sclerotherapy: techniques and uses. Perspect Vasc Surg Endovasc Ther. 2009;21:91-3.
16. De Maeseneer MG, Kakkos SK, Aherne T et al. European Society for vascular surgery (ESVS) 2022 Clinical practice guidelines on the management of chronic venous disease of the lower limbs. Eur J Vasc Endovasc Surg. 2022;63: 184-267.