



A CASE OF SUPERFICIAL VENOUS ANEURYSM- A RARE PRESENTATION

Surgery

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ABSTRACT

Aneurysm of the venous system is a rare entity when compared to arterial system. Among the venous aneurysm most of the attention has been paid to deep venous aneurysm because of their propensity to develop thrombosis and eventually embolise. Superficial venous aneurysms draw less attention than deep venous aneurysms because they are not life threatening, but there have been reports of superficial aneurysms presenting with thrombosis and pulmonary embolism. We present a rare case of symptomatic short saphenous vein aneurysm that required evaluation and intervention.

KEYWORDS

Aneurysm, Superficial, Thrombo-embolism, Thrombosis

INTRODUCTION:

Aneurysm of the venous system is a rare entity when compared to arterial system. A venous aneurysm is defined as a dilatation of the part of the vein that communicates with a main venous structure by a single path and it must not be associated with an arterio-venous communication or a pseudo-aneurysm. Among the venous aneurysm most of the attention has been paid to deep venous aneurysm because of their propensity to develop thrombosis and eventually embolise. Superficial venous aneurysms draw less attention than deep venous aneurysms because they are not life threatening, but there have been reports of superficial aneurysms presenting with thrombosis and pulmonary embolism. We present a rare case of symptomatic short saphenous vein aneurysm that required evaluation and intervention.

Case Report:

A 68 year old male patient, farmer by profession came to us with complaints of severe pain and swelling in the left lower limb. He also complained of a gradually progressive swelling in the posterior aspect of knee joint. Initially pain was more towards the evening and on standing for a long time. Gradually the pain progressed from standing for a few minutes to entire day. He denied any history of trauma to the limb or paraesthesia.

On physical examination it was a soft non pulsatile swelling in the popliteal fossa measuring 4cm x 3cm, non tender. Grossly dilated vein was noted in the posterolateral aspect of the leg which was suggestive of short saphenous varicosity. No other veins were visible. There were no ulcerations or skin changes (lipodermatosclerosis).

Venous Doppler of the lower limb confirmed our diagnostic suspicion. It suggested aneurismal dilatation of the short saphenous vein close to the sapheno-popliteal junction measuring 2.4cm x 1.59cm. There was no evidence of any thrombosis. The incompetent sapheno-popliteal junction showed Grade IV reflux. The short saphenous vein showed varicosity measuring 8mm. Grade I reflux was noted at the sapheno femoral junction. There was no evidence of any deep venous aneurysm or thrombosis. (Fig. 1)



Fig. 1: Venous doppler showing aneurismal dilatation of the short saphenous vein

Arterial Doppler was done to rule out any arterio venous communication and other arterial abnormalities. We decided to go ahead with ligation of aneurysm and excision of short saphenous vein. After undergoing preoperative examinations and cardiologic assessment, the patient underwent open surgical treatment with excision of aneurysm. (Fig. 2) Venous wall shows endothelial denudation, attenuation of the elastic lamellae and medial fibrosis on histological examination. (Fig. 3)



Fig. 2: Demonstration of saphenous vein aneurysm

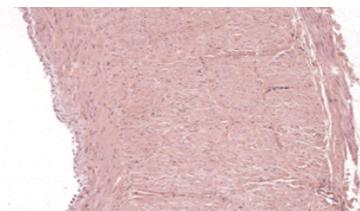


Fig. 3: Histological examination of aneurysm

DISCUSSION:

The etiology of venous aneurysms is poorly understood and little clinical data regarding their pathogenesis is available in the literature. Not surprisingly, no genetic studies related to any underlying connective tissue or matrix enzyme abnormalities have been performed. Schatz and Fine¹ considered endophlebopertrophy to be an important factor in the development of venous aneurysms, with increased venous outflow causing early hypertrophy of the vein wall followed by dilatation and sclerosis. Other reports have mentioned congenital weakness or degenerative changes in the venous wall due to conjunctive tissue alterations^{1,2}. Pascarella et al³ stated that superficial venous aneurysms in the lower extremity were common and located distal to an incompetent venous valve. They suggested that the aneurysmal dilatation was shaped by the reflux flow that strikes the venous wall and produces a turbulent flow. This is quite different from deep venous aneurysms, which are caused by an intrinsic vein wall weakness and are not related to flow or turbulence. They can be congenital or acquired secondary to trauma, inflammation and

degenerative change in the vessel wall or increased pressure within the vascular system³.

There is no evidence of any link between venous aneurysms and arterial aneurysms. For example, patients with connective tissue disorders such as Ehlers-Danlos or Marfan's syndrome do not manifest venous aneurysms.

Case reports have shown them to be present in jugular veins, the vena cava, axillary-subclavian veins, femoral veins, and popliteal veins^{4,5}. The overall primary pathologic etiology has not been determined. It is likely they are flow-related phenomena in one setting and a local degenerative process in other settings. In contrast to thrombotic injury, characterized as an occlusive fibrotic process, the flow dynamics in a venous aneurysm direct the vein in "outward" remodelling. Histological analysis shows vein wall fragmentation with elastin degeneration.⁵ Pathologically the wall is thin, in which elastin fragmentation alternates with smooth muscle cell attenuation and fibrous tissue deposition, thus suggesting a typical response to vascular injury.⁶

Aneurysms of the saphenous systems were classified into four types. Type I aneurysms (52%) were found in the proximal third of the saphenous vein, just distal to the subterminal valve. Type II aneurysms were found in the shaft of the saphenous vein in the distal third of the thigh (35%). The third classification (type III) of superficial saphenous vein aneurysms is a combination of type I and II in the same lower extremity (3 patients/43 patients). Superficial venous aneurysms of the short saphenous system were found and were classified as type IV (6%).⁷

Although most reported superficial venous aneurysms were asymptomatic with minor complications, thrombosis and severe pain have sometimes been reported. A recent report described radial nerve compression which was induced by a cephalic venous aneurysm but deep venous aneurysms especially popliteal venous aneurysms, can thrombose and cause pulmonary embolisms.^{8,9}

In the cases that have been reported, Ultrasonography was the first performed because it is non invasive. In a sonogram, the aneurysm appears as an anechoic cystic structure. Doppler ultrasound scans show the vascular nature of the mass¹⁰ with any connections to the venous circulation and this can differentiate venous aneurysms from arterial aneurysms or arteriovenous fistula if any arterial flow component is present in the mass.¹¹

Duplex ultrasound enables the identification of the feeding vessels, reveals the presence of thrombi, and provides help in planning the surgical procedure. Computed tomography and magnetic resonance imaging reveal accurately the size and extent of the lesion and allow its vascular origin to be confirmed. Dynamic enhanced CT shows a slight enhancement in the arterial phase and homogeneous enhancement in the late phase.¹² Indications for surgery in cases of superficial venous aneurysm are the presence of symptoms, the potential for thrombus formation and more commonly, a cosmetic problem. In cases of deep venous aneurysms, prevention of major complications such as thromboembolism or aneurismal rupture is the most important indication. In cases of popliteal venous aneurysm, a saccular type aneurysm of any size or a large fusiform-type aneurysm should be treated surgically because of the potential for thrombosis.¹³ Large aneurysms, even if they are of the superficial venous type, should be excised, given their potential to compress the adjacent nerves.

Surgical procedures consist of tangential excision or total excision with some reconstructive procedures. The surgical repair is a uniformly successful form of therapy but satisfactory venous function should not be disregarded. Major deep venous occlusion may predispose to venous outflow impedance, venous hypertension and venous ulceration.¹⁴ Superficial venous aneurysms are usually well managed by simple ligation and excision. Small saphenous venous aneurysms can be treated both by endoluminal laser and by endovenous radio frequency energy, although endovenous ablation may be desirable in the presence of a large venous aneurysm. Venous dilatation and large varices could be treated with injections of foam and sclerosing agents, followed by local compression, which obliterates or thromboses the aneurysmal space; however, the use of foam-sclerotherapy to obliterate venous aneurysms has been reported

in only two cases.^{15,16} The obstruction or sclerosis of the aneurismal space should be obtained without altering the vascular flow.

In conclusion, venous aneurysm should be included in the differential diagnosis of a subcutaneous mass and an accurate understanding of the differences between superficial and deep venous aneurysms will help in diagnosis.

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