Short Report

A Rare Case of Popliteal Venous Aneurysm

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Abstract

Objective: Popliteal venous aneurysms are uncommon but potentially fatal abnormalities, since they can cause pulmonary emboli. Here, we report a case of a popliteal venous aneurysm of the right popliteal fossa.

Method: In a 32-year-old healthy male complaining of a localised swelling and pain in his right popliteal fossa, duplex ultrasonography and angio-computed tomography revealed a giant popliteal vein aneurysm. The popliteal fossa was surgically explored and aneurysm was resected partially and sutured through posterior approach.

Results: Recovery was uneventful and patient still remains asymptomatic. Further duplex ultrasonography follow-ups revealed patency of popliteal vein without thrombotic changes in 1st, 6th, 12th and 15th months. Additionally, no dilatation of the operated vein segment has been observed in the follow-up ultrasound studies.

Conclusion: Surgical repair of popliteal venous aneurysms can be performed safely. Partial aneurysm resection together with lateral venorrhaphy is preferred. Due to pulmonary thrombo-embolic complication risks, we recommend surgery in early stages.

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Introduction

Primary popliteal venous aneurysms (PVAs) are rare. In total, there are 164 reported cases. In general, first signs for diagnosis are pulmonary embolism (PE) or other thrombo-embolic events. Although rare, it is important to recognise this disease, in order to prevent deaths due to pulmonary emboli.

Case

The case presented here is a 32-year-old man with a local discomfort in the left popliteal fossa. On detailed physical examination, a soft, non-pulsatile and compressible mass was identified. Electrocardiogram and chest X-ray did not demonstrate any pathology. Complete blood count and basic metabolic profile were normal. Color-Doppler ultrasonography was performed to identify the origin of the lesion (Fig. 1A). Proximal, distal popliteal vein and aneurysmal segment diameters with Doppler ultrasonography (DUS) were found as 12, 11 and 43 mm, respectively. Angio-computed tomography confirmed a 42 × 68 mm-oval mass in the left popliteal fossa, involving popliteal vein. The popliteal fossa was explored through posterior approach by a vertical incision. A large popliteal vein aneurysm sac was incised longitudinally and, after resection, the vein wall was repaired primarily (Fig. 2). An oral anticoagulant containing warfarin was prescribed for 6 months. The patient was discharged on the 4th post operative day. Further follow-up duplex ultrasonography investigations showed patent popliteal vein without thrombotic changes in 1st, 6th, 12th and 15th months. Additionally, no dilatation of the operated vein segment has been observed in the follow-up ultrasound studies (Fig. 1B).

Discussion

The first asymptomatic PVA was reported by May and Nissel in 1968. According to a current review, respiratory symptoms caused by pulmonary embolism are the predominating symptoms. The aetiology of venous aneurysm remains unknown but congenital factors, inflammation, trauma or degenerative changes have been proposed. Detailed microscopy reported destruction of the internal elastic lamina.

Variety of diagnostic tools such as phlebography, duplex ultrasonography, magnetic resonance imaging, computed tomography (CT) and surgical exploration are available. Venous duplex
Scan is the preferred diagnostic method to assess the lower limb deep vein aneurysm, and to define the size and morphology of the aneurysm. CT scan or ascending venography can be performed to learn more about venous anatomy before any surgical repair. Phlebography by far has been the dominant diagnostic test method, although case reports using duplex ultrasonography have started to increase recently.5

There is no consensus on the diameter of dilated veins to assist us in diagnosing an aneurysm. Some authors call it an aneurysm if the diameter is twice its normal size.1

Pulmonary embolic events are the most common clinical presentations of a venous aneurysm; the risks are unpredictable and may not be related to the presence or absence of thrombus on imaging studies.3 In our case, a diagnosis was made before occurrence of a pulmonary embolus.

As use of anticoagulants alone may remain ineffective in preventing for PVS cases, surgical repair is recommended for both asymptomatic and symptomatic patients.3 Posterior genicular approach with partial resection and venorrhaphy is the most common method used to treat PVA.1 Total aneurysmectomy and venorrhaphy is a reasonable choice for saccular aneurysms, but occasionally the aneurysm sac may be resected and a graft can be interposed. It is advised to resect fusiform aneurysms and anastomose end to end or to interpose with a graft depending on its size. A bypass with ligation of the proximal and distal vein is another preferred method.1 In our opinion, partial resection procedure must be preferred. In the literature, there are no data on progressive dilatation with this technique. Few would treat an arterial aneurysm this way because of the diseased wall.4 Histology showed destruction of the internal elastic lamina, elastin insufficiency and endophlebosclerosis.

We preferred partial aneurysm resection and lateral venorrhaphy, instead of total resection of aneurysm. For cases of smaller fusiform aneurysms (less than 20 mm) without thrombus we recommend conservative monitoring approach.1 Recurrence of PVA is possible after surgical repair.5 We exercised a follow-up of 15 months for our case. Late patency rates are encouraging. There has been no pulmonary embolism and no recurrence of aneurysm or thrombus formation at the surgical site (Fig. 1C). Long-term patency without anticoagulation in a follow-up of 40 months has been described.5 Despite current reviews we suggest a more simple and less invasive surgical method.

**Conclusion**

Because of the risk of thrombo-embolic complications, simple surgical treatment is recommended in all PVA. Partial aneurysm resection with lateral venorrhaphy is the preferred procedure. We highlight that, evaluation of the lower extremity venous system by duplex ultrasonography and early surgical repair of PVA are very important in all cases with pulmonary embolism. PVA are not rare. Some of them are overlooked.

**Conflict of Interest**

None.

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**References**