CASE REPORT

A Soft Popliteal Mass and Pulmonary Embolism

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Introduction

Pulmonary embolism frequently results from deep venous thrombosis. For both conditions anticoagulation is the recommended treatment. We report on a female patient in whom pulmonary embolism was caused by a popliteal venous aneurysm. In this case anticoagulation alone might have been ineffective and surgical correction was performed.

Case Report

A 61-year-old woman complained of intermittent, burning pain of the left popliteal fossa over a period of two years. Initial physical examination revealed a palpable soft compressible mass behind her left knee. Pertinent history included a motor vehicle accident as a pedestrian 26 years earlier, in which a car collided with her left thigh. The resultant fracture of her left mid-femoral shaft was treated with an intramedullary rod. There was no history of deep venous thrombosis and clinically no evidence for arterial or venous aneurysmal disease elsewhere in the patient or her family. Further investigations by duplex sonography revealed a large popliteal venous aneurysm with no visible mural thrombus. The finding was confirmed by ascending phlebography, which also showed evidence of post-thrombotic changes of the deep calf veins (Fig. 1(A)). Surgical resection of the aneurysm was recommended but the patient refused operation as well as anticoagulation therapy.

Two years later she presented with acute chest pain and dyspnoea. Ventilation/perfusion scintigraphy showed a high probability for pulmonary embolism (Fig. 1(B)). Duplex sonography revealed a largely thrombosed venous aneurysm and the finding was confirmed by MRI (Fig. 1(C)). The patient was anticoagulated with phenprocoumon and, again, operation of the aneurysm was recommended. Tangential aneurysmectomy with lateral venorrhaphy was performed 3 months later. The popliteal venous aneurysm was exposed through a standard medial incision. A vascular clamp was placed tangentially along the line of transection. The clamp was then undersewn with a 6/0 running mattress stitch. The first layer was sewn before sac excision, because this allowed resection of the aneurysm on the clamp without the risk of the vein slipping out of the clamp. After removal of the clamp, a second layer of over-and-over running suture reinforced the free venous edges outside the mattress closure. With this technique the venous endothelium injured by the clamp was excluded from the circulation. Of note was that no thrombus was found in the aneurysm intraoperatively (Fig. 1(D)). Histology showed a vessel wall with fibrotic local intimal proliferation. Repeated phlebography documented a patent popliteal vein one week after the operation. Six months after the intervention oral anticoagulation was stopped. The patient remains asymptomatic.

Discussion

Venous aneurysms are rare vascular abnormalities that have been described throughout the venous system. Most venous aneurysms are thought to be of little clinical significance. However, this is not the case for
Fig. 1. (A) Ascending phlebography showing the popliteal venous aneurysm. (B) Perfusion (above) and ventilation (below) lung scintigraphy: High probability for pulmonary embolism. (C) MRI of the popliteal fossa demonstrating the partially thrombosed popliteal venous aneurysm. The arrows point out the venous aneurysm and the thrombus. (D) Intraoperative demonstration of the popliteal vein aneurysm.
popliteal venous aneurysms. So far, 26 patients with popliteal venous aneurysms have been reported in the literature. The aetiology of venous aneurysms is unknown. Trauma, congenital weakness, inflammation, and degenerative changes have been considered as possible factors in pathogenesis. A traumatic origin of the aneurysm (dissection of the vessel wall) seems possible in our patient.

All popliteal venous aneurysms described thus far were first seen with symptoms related to a thrombotic or embolic complication. Twenty of 26 patients (77%) presented with pulmonary embolism and six (23%) had post-thrombotic symptoms. By contrast, in our patient the venous aneurysm was diagnosed because of local pain and swelling in the popliteal fossa long before thromboembolic complications occurred. Although the patient did not complain of symptoms suggestive of chronic venous insufficiency, post-thrombotic changes in the calf veins were detected by phlebography. Since the patient refused operation as well as anticoagulation therapy, the clinical course of our case seems to underline the theory of the natural history of popliteal venous aneurysms. Whereas the venous aneurysm initially did not show mural thrombosis, the lumen subsequently partially thrombosed resulting in a symptomatic pulmonary embolism two years after the initial diagnosis of the aneurysm. Interestingly, three months after the acute thromboembolic event no thrombotic material was found in the aneurysm after the patient had been on anticoagulation therapy for this time period. One may speculate that either spontaneous lysis or further pulmonary embolism may have occurred. However, the patient had no clinical signs and symptoms of recurrent pulmonary embolism, although ventilation/perfusion scintigraphy was not repeated.

As reported in the literature, anticoagulation alone may be an inadequate therapy for popliteal venous aneurysms, as it may not prevent pulmonary embolism. A fatal outcome in two patients so treated has been described. Moreover, six of 17 (35%) patients receiving anticoagulation who were awaiting operative repair had recurrent pulmonary emboli. Therefore, surgical therapy is generally recommended with a minimal time delay. The surgical method of choice is tangential aneurysmectomy and lateral venorrhaphy. There have been no reports of recurrent pulmonary embolism or mortality following operative repair. This technique is readily applied to most popliteal venous aneurysms because the vast majority are saccular. The occasional fusiform aneurysm can be resected, and an interposition graft placed. Long-term anticoagulation after successful operative repair is not supported by the literature.

References


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