SHORT REPORT

Popliteal Vein Aneurysm: A Rare Cause of Recurrent Pulmonary Embolism

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Popliteal vein aneurysms (PVA) have been found to be a source for recurrent pulmonary embolism (PE) with or without anticoagulant treatment. We report a case of recurrent pulmonary embolism in which a late diagnosis of PVA was found to be the source of PE. The diagnosis was made by a comprehensive duplex scan and confirmed by phlebography. Surgery is recommended in all cases. In our patient, resection and end to end anastomosis was performed with complete recovery.

Key Words: Popliteal vein aneurysm; Pulmonary embolism.

Introduction

Primary popliteal vein aneurysm is a rare pathology. It often leads to recurrent pulmonary embolism (PE). Anticoagulant therapy is not sufficient and does not prevent recurrent episodes of PE. We propose operative repair as the best method of treatment. Since the aneurysmal sac is usually filled with thrombi, protective measurements should be taken before and during surgery.

Case Report

A 53 old woman was admitted for surgery due to a popliteal vein aneurysm (PVA) of her right leg. She had three episodes of pulmonary embolism during the year before surgery due to late diagnosis of the source of PE.

Investigation included abdominal and pelvic computer tomography (CT), Duplex Venous Scan of the femoral veins, and coagulability status—all were normal. No etiology for her PE was found. She was discharged on Coumadin (Warfarin) and maintained Prothrombin Time (PT) at 2.5–3.5 I.N.R. for three months but returned with recurrent PE after discontinuing Coumadin.

Again, no source for the PE was found and she was discharged on Coumadin. However, she suffered a third episode of PE while on anticoagulant treatment. This time a right popliteal vein aneurysm was detected on duplex venous scan. A Vena Cava filter (Greenfield) was inserted. After insertion, a 4th episode of PE occurred.

Phlebography of the both legs revealed a saccular aneurysm of the proximal right popliteal vein (above knee), 20 mm in diameter containing a clot (Fig. 1).

Surgery was decided upon. Resection of the right popliteal vein aneurysm with primary anastomosis was performed using a posterior approach. Operative findings included an organized as well as acute thrombus within the aneurysm. The postoperative course was uneventful apart from a wound hematoma and temporary superficial peroneal nerve palsy. Coumadin was renewed.

Two months after surgery a duplex venous scan was performed—the popliteal vein was patent. Coumadin was ceased 3 months after operation.

Discussion

Popliteal vein aneurysm (PVA) is a rare pathology of the deep venous system. It may be a source of pulmonary embolism.1,2 There are two types of popliteal vein aneurysms—saccular and fusiform.
Saccular is more frequent. They are often thrombosed and complicated by pulmonary embolism. Due to extensive use of noninvasive diagnostic methods such as duplex venous scanning, this pathology has been detected with increasing frequency. All authors recommend phlebography in preparation of surgical treatment since it demonstrates the anatomy of the aneurysm and venous system. Anticoagulation alone without surgery in patients with PE shows a high incidence (80%) of recurrence. This was confirmed in our case (Table 1).

In the literature, several operative procedures have been reported. In saccular aneurysms two options are recommended:

1. Tangential aneurysmectomy with lateral venorraphy, and
2. Resection with end to end anastomosis.

In fusiform aneurysms, in addition to the tangential aneurysmectomy, resection with vein grafts are also cited. The most recommended operation is tangential aneurysmectomy with lateral venorraphy.

In our case, operative findings included an organized as well as fresh clot with inflammatory involvement of vein wall. Vein length allowed for resection and end to end anastomosis.

In the literature, several reports of conservative treatment of asymptomatic aneurysms were reported. However, we suggest that all cases of popliteal vein aneurysms, including asymptomatic ones, have unpredictable course and are a potentially dangerous, life-threatening source of pulmonary embolism.

Therefore, the treatment of choice for this pathology is surgery—which is usually not complicated by mortality, morbidity or recurrence. In conclusion, we stress the importance of investigation by duplex scan of femoral as well as popliteal vein in unexplained cases of pulmonary embolism.

Table 1. Summary of surgical treatment in the literature.

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Fig. 1. Phlebography of right leg demonstrating popliteal vein aneurysm of above knee popliteal vein with intraluminal thrombus.