Management of the Primary Popliteal Vein Aneurysm: Case Report

Primer Popliteal Ven Anevrizmasının Tedavisi

Yunus Keser YILMAZ,[a]
Sevinç ŞAHİN,[b]
Yaşar TURAN,[c]
Savaş SARIKAYA,[c]
Meral EKİM,[d]
Burak AÇIKGÖZ,[a]
Ferit ÇİÇEKÇİOĞLU,[a]
Halil İbrahim SERİN,[e]
Hasan EKİM[a]

Departments of
[a]Cardiovascular Surgery,
[b]Pathology,
[c]Cardiology,
[e]Radiology,
Bozok University Faculty of Medicine,
[d]Department of Biochemistry,
Bozok University School of Health,
Yozgat

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Yazışma Adresi/*Correspondence:*
Yunus Keser YILMAZ
Bozok University Faculty of Medicine,
Department of Cardiovascular Surgery,
Yozgat,
TÜRKİYE/TURKEY
dryunuskeser@hotmail.com

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ABSTRACT Primary popliteal venous aneurysm (PVA) is a rare , but a life-threatening entity. Most of the patients with PVA are asymptomatic, and pulmonary emboli may be the first symptom. Duplex ultrasonography is an appropriate method for diagnosis. Management of asymptomatic PVA is still controversial, but surgery is indicated in all symptomatic patients with venous aneurysms. We report a 67-year-old male patient with left PVA. This study may contribute to a better understanding of similar events. Surgical repair of PVA should be considered in all patients to decrease the risk of thromboembolism. Therefore, we recommend early surgical repair of both asymptomatic and symptomatic PVAs.

Key Words: Aneurysm; popliteal vein; ultrasonography

ÖZET Popliteal ven anevrizması (PVA) venöz sistemde nadir görülen, hayatı tehdit edebilen patolojik bir antitedir. Hastaların çoğu asemptomatiktir ve pulmoner emboli ilk semptom olabilir. Duplex ultrasonografi tanı için uygun bir yöntemdir. Asemptomatik PVA'nın tedavisi hala tartışmalıdır, fakat tüm semptomatik ve venöz anevrizmalı hastalarda cerrahi endikedir. Bu yazıda 67 yaşında sol PVA'sı olan bir erkek hastayı benzer olayların daha iyi anlaşılmasına katkıda bulunmak üzere sunduk. PVA'nın cerrahi tedavisi, tromboemboli riskini azaltmak için tüm hastalarda düşünülmelidir. Bu yüzden, biz hem semptomatik ve hem de asemptomatik PVA'ların erken cerrahi tedaviyi tavsiye ediyoruz.

Anahtar Kelimeler: Anevrizma; popliteal ven; ultrasonografi

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Primary aneurysms of veins are rare and they can occur anywhere in the venous system.[1] Popliteal venous aneurysm (PVA) is a rare entity, but it may be a life-threatening since it can be a source for pulmonary emboli (PE). Most of the patients with PVA are asymptomatic, and PE may be the first symptom in a considerable number of patients.[2,3] PVA was first reported by May and Nissl in 1968.[4] In recent years, with the widespread use of venous duplex scanning, PVA has began to be diagnosed more in patients with deep or superficial vein insufficiency. Although surgery is the preferred treatment method for symptomatic PVA, treatment of asymptomatic patients is still unclear.

CASE REPORT

A 67-year-old male patient was admitted to our cardiovascular surgery outpatient clinic because of leg pain on prolonged standing. The patient had a mass in the left popliteal fossa that had been present since his childhood. He was asymptomatic for many decades. Prior to the swelling, he did not have any history of trauma, inflammatory or vascular diseases. He had been diagnosed with diabetes mellitus and hypertension. He had coronary artery bypass graft surgery five years ago. Physical examination revealed a soft, fluctuant mass on the left popliteal fossa. On further examination, there were no palpable cords down the extremity. To identify the nature of the mass, the patient underwent Duplex venous ultrasonography, which revealed a saccular popliteal vein aneurysm with a diameter of 3.52 x 2.25 cm in the left popliteal fossa (Figure 1). Aneurysm was also confirmed with magnetic resonance imaging (MRI) (Figure 2). Other clinical and laboratory findings were normal. Written informed consent of the patient was obtained. Low molecular weight heparin (LMWH) treatment was administered earlier to prevent thromboembolic complications, and it was discontinued 12 hours before surgery. The popliteal fossa was explored through a posterior approach. The popliteal vein aneurysm of was exposed during surgery (Figure 3). Tangential aneurysmectomy was performed. In histopathological examination, Verhoeff's Van Gieson showed irregularities in elastic fibers particularly in the internal elastic lamina, histochemically (Figure 4). We did not observe any complication after surgery. The patient had an uneventful recovery. He was discharged 3 days after surgery. the patient continued to use compression stockings. Popliteal vein was patent on radiological imaging 6 weeks after surgery, and the patient's symptoms resolved completely.

FIGURE 1: Doppler ultrasonographic view of the popliteal venous aneurysm.

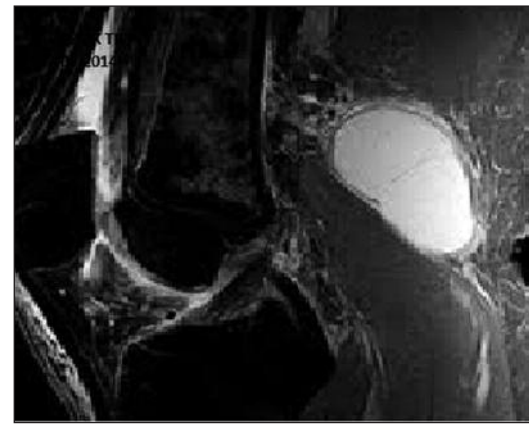

FIGURE 2: Popliteal venous aneurysm on magnetic resonance imaging. Sagittal T2 sequence of the popliteal venous aneurysm.

DISCUSSION

Primary and secondary venous aneurysms are the subtypes of the venous aneurysms. Secondary aneurysms can be caused by trauma, inflammation, venous valve insufficiency, arteriovenous fistula and degenerative changes in the venous wall. Primary venous aneurysm can be defined as a solitary area of venous dilatation containing all three layers of the vein wall that communicates with a main venous structure by a single channel, and must not be associated with an arteriovenous communication or pseudoaneurysm.[5] The primary venous aneurysms are less common, and their pathogenesis is unclear. In the primary form with a true aneurysm, the mechanism is thought to be the aneurismal dilatation of a weak vein wall.

In our case, the patient's complaint had been present since his childhood, and the absence of any connective tissue disorder, infection, trauma, or other arteriovenous malformation supports a pri-

FIGURE 3: Popliteal venous aneurysm during surgery.

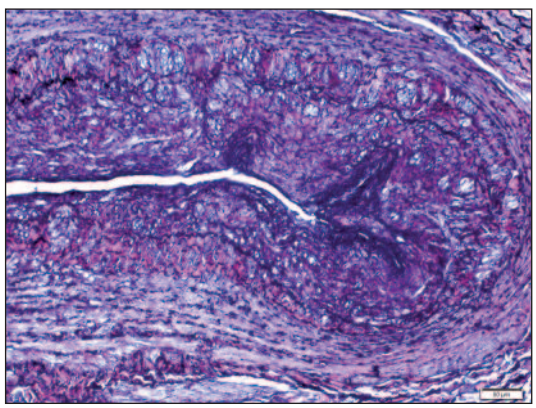

FIGURE 4: Histopathological photo of the popliteal vein aneurysm. Verhoeff's Van Gieson staining protocol for elastic fibers.

mary venous aneurysm. The aneurysm was a true aneurysm, and there was no arteriovenous association. Thus, we accepted that it was a primary PVA. Although primary PVA is a rare vascular abnormality, it is very important to recognize it because of the associated risk of pulmonary embolism may be fatal.[6] Other potential complications of venous aneurysms include rupture, venous obstruction, and compression of neighboring structures.[7]

In case of a palpable mass in the popliteal fossa, Duplex ultrasonography, which is an easily accessible and cost- effective method, is an appropriate option for the differential diagnosis. Maleti et al.[8] reported that the critical diameter to define a venous fusiform dilatation as an aneurysm was at least three times (>20 mm) that of the normal popliteal vein. Management of asymptomatic PVA is still controversial. Surgery is indicated in all symptomatic patients. In addition, patients with asymptomatic saccular or large (>20 mm) fusiform aneurysms should also be treated surgically, even in the absence of thrombus, because of the unpredictable risk of thromboembolic complication.[9]

There are several surgical procedures, and the choice of surgical method depends on the perioperative morphological findings. Posterior approach to the popliteal fossa is feasible in most cases, and can be recommended. Although aneurysmal resection and end-to-end anastomosis is a commonly preferred method, tangential aneurysmectomy with lateral repair may also be performed in appropriate cases, as was done in our case. Surgery may be the best treatment for both symptomatic and asymptomatic PVAs to prevent development of thromboembolic complications. We suggest that all popliteal venous aneurysms should be surgically treated to prevent life-threatening severe complications.

Conflict of Interest

Authors declared no conflict of interest or financial support.

REFERENCES

1. Sfyroeras GS, Antoniou GA, Drakou AA, Karathanos C, Giannoukas AD. Visceral venous aneurysms: clinical presentation, natural history and their management: a systematic review. Eur J Vasc Endovasc Surg 2009;38 (4):498-505.
2. Russell DA, Rabinson GJ, Johnson BF. Popliteal venous aneurysm: a rare cause of recurrent pulmonary emboli and limb swelling. Cardiovasc Intervent Radiol 2008;31(5):1026-9.
3. Aldricge SC, Comerota AJ, Katz ML, Wolk JH, Goldman BI, White JV. Popliteal venoous aneurysm: report of two cases and review of the world literature. J Vasc Surg 1993;18(4): 708-15.
4. Roche-Nagle G, Wooster D, Oreopoulos G. Popliteal vein aneurysm. Am J Surg 2010;199(1):e5-6.
5. Tschuor C, Dindo D, Clavien PA, Hahnloser D. A challenging hernia: primary venous aneurysm of the proximal saphenous vein. Hernia 2013;17(1):111-3.
6. Cox MW, Krishnan S, Aidinian G. Fatal pulmonary embolus associated with asymptomatic popliteal venous aneurysm. J Vasc Surg 2008;48(4):1040.
7. Herrera LJ, Davis JW, Livesay JJ. Popliteal vein aneurysm presenting as a popliteal mass. Tex Heart Inst J 2006;33(2):246-8.
8. Welke F, Heidrich M, Balzer K. Aneurysmen der Vena poplitea als seltene Ursache pulmonalembolischer Komplikationen. Phlebologie 2002;31:145-9.
9. Sessa C, Nicolini P, Perrin M, Farah I, Magne JL, Guidicelli H. Management of symptomatic and asymptomatic popliteal venous aneurysms: a retrospective analysis of 25 patients and review of the literature. J Vasc Surg. 2000;32(5):902-12.