

Deep Femoral Artery Aneurysm Presenting as Lower Limb Swelling: A Case Report

Yong-Pil Cho,¹ Soo-Jung Choi,² Tae-Won Kwon,³ Myoung-Sik Han,¹ Yong-Ho Kim,¹ Chan-Wook Kim,³ and Sung-Gyu Lee³

Departments of ¹Surgery and ²Diagnostic Radiology, University of Ulsan College of Medicine, Gangneung Asan Hospital, Gangneung, Korea;

Department of ³Surgery, University of Ulsan College of Medicine, Seoul Asan Hospital, Seoul, Korea.

We report a rare case of lower limb swelling due to compression of the superficial femoral vein by a solitary deep femoral artery aneurysm. The patient was a 58-year-old man presenting with acute swelling of the right lower limb caused by deep venous thrombosis. A multi-detector computed tomographic scan (CT) confirmed the diagnosis of a deep femoral artery aneurysm and revealed no evidence of aneurysms or occlusive lesions in the other arteries. Aneurysmectomy and ligation of the deep femoral artery were successfully performed. Preoperative multi-detector CT scanning is a valuable, non-invasive diagnostic tool to delineate not only the state of the aneurysm, but also that of the distal arterial tree.

Key Words: Deep femoral artery, aneurysm, computed tomography

INTRODUCTION

Aneurysms of the deep femoral artery are very rare because of their anatomical features and the characteristics of the arterial wall.¹⁻⁴ Most patients with a deep femoral artery aneurysm have few symptoms until it expands, and once this happens, rapid enlargement is noted. However, they have a high rate of rupture in comparison with other peripheral arterial aneurysms, and local pressure symptoms caused by the aneurysm could precipitate nerve and vein compression and

thrombosis in some cases. To establish the diagnosis, color Doppler ultrasound, multi-detector computed tomographic (CT) scanning, and angiography are all extremely useful. Multi-detector CT scanning or angiography is especially recommended to avoid missing other aneurysms and occlusive arterial lesions. In our case, a multi-detector CT scan confirmed the diagnosis of a deep femoral artery aneurysm and revealed no evidence of aneurysms or occlusive lesions in the other arteries.

CASE REPORT

A 58-year-old man was admitted to the hospital, with a 3-day history of acute swelling of the right lower limb. He had undergone aortic valve replacement surgery due to severe aortic regurgitation at an outside facility 7 years before and was being treated with warfarin (5 mg daily, adjusted to maintain a prothrombin time of 2.0 INR). He denied any history of previous trauma, fractures, intravenous drug abuse, or recent infections. Physical examination revealed an 8 by 10 cm, tender, pulsatile mass in the right femoral area and swelling in the right lower limb. Both popliteal and pedal pulses were palpable. Apart from a prolonged prothrombin time (2.11 INR), blood chemistry parameters were unremarkable.

A color Doppler ultrasound showed a huge deep femoral artery aneurysm posterior to the superficial femoral vein, measuring approximately 8.5 × 9.0 × 7.5 cm (Fig. 1a). The deep femoral

Received September 3, 2004
Accepted November 18, 2004

Reprint address: requests to Dr. Yong-Pil Cho, Department of Surgery, University of Ulsan College of Medicine, Gangneung Asan Hospital, 415 Bangdong-ri, Sacheon-myeon, Gangneung, Gangwon-do 210-711, Korea. Tel: 82-33-610-3229, Fax: 82-33-641-8120, E-mail: ypcho@gnah.co.kr

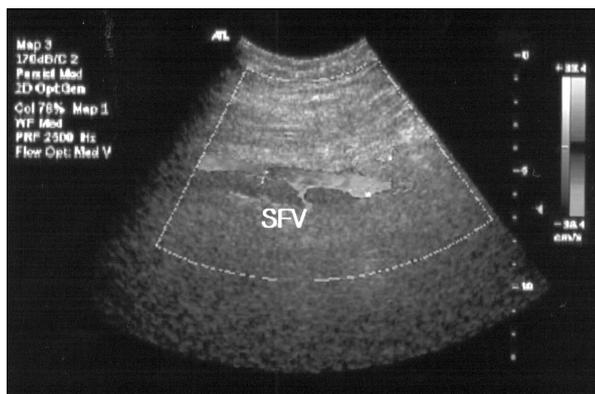


Fig. 2. Postoperative color Doppler ultrasound showed patent superficial femoral (SFV) and popliteal veins.

rate.^{7,8} In one series, one in three ruptured deep femoral artery aneurysms resulted in amputation.¹ Additional complications include acute expansion with local pressure symptoms such as femoral nerve neuropathy or phlegmasia from venous occlusion and acute lower limb ischemia secondary to thrombosis or embolization.¹⁻⁸

Diagnosis of deep femoral artery aneurysms is almost impossible on a clinical basis, owing to the rarity of the disease and difficulty of determining if a pulsating mass in the groin or thigh pertains to one or to another of the femoral arteries.¹⁻⁹ To establish the diagnosis, color Doppler ultrasound, multi-detector CT scanning, and angiography are all extremely useful. Multi-detector CT scanning or angiography is especially recommended to avoid missing other aneurysms and occlusive arterial lesions. Angiography is the best tool for defining the site and length of arterial involvement. In the case of a thrombosis, however, angiography can miss even a large aneurysm. Furthermore, it is an invasive procedure. The availability of highly sensitive and non-invasive tools for diagnosis of peripheral arterial aneurysms and occlusive diseases would be of great clinical benefit in order to reduce the number of patients undergoing angiography, even in the absence of significant lesions. Catalano et al. compared multi-detector CT scanning with digital subtraction angiography in evaluation of the infrarenal aorta and lower-extremity arterial system.¹⁰ They concluded that multi-detector CT scanning appears consistent and accurate in the assessment of patients with peripheral arterial disease. The

multi-detector CT scan in our case confirmed the diagnosis of a deep femoral artery aneurysm and demonstrated that there were no aneurysms or occlusive arterial lesions in any other arteries.

The significant morbidity associated with an emergent operation and the uncertainty of the natural history of deep femoral artery aneurysms have led to recommendations that deep femoral artery aneurysms should be treated operatively once diagnosed. The type of operation largely depends on the need or advisability of restoring flow continuity along the course of the deep femoral artery.⁹ In our case, because of the difficulty in handling the distal deep femoral artery and the lack of evidence of ischemic change, we performed aneurysmectomy without revascularization. However, we believe that bypass grafting of the deep femoral aneurysms should be performed because this disease usually occurs in patients of advanced age with atherosclerotic lesions.

In conclusion, an aneurysm of the deep femoral artery can compress the superficial femoral vein resulting in venous stasis and it should be taken into consideration as a differential diagnosis of deep venous thrombosis. Multi-detector CT scanning is a useful, non-invasive technique to establish the diagnosis of a deep femoral artery aneurysm and reduces the likelihood that other aneurysms and occlusive arterial lesions will be missed.

REFERENCES

1. Cutler BS, Darling RC. Surgical management of arteriosclerotic femoral aneurysms. *Surgery* 1973;74:764-73.
2. Roseman JM, Wyche D. True aneurysm of the profunda femoris artery. Literature review, differential diagnosis, management. *J Cardiovasc Surg* 1987;28:701-5.
3. Johnson CA, Goff JM, Rehrig ST, Hadro NC. Asymptomatic profunda femoris artery aneurysm: diagnosis and rationale for management. *Eur J Vasc Endovasc Surg* 2002;24:91-2.
4. Toda R, Yuda T, Watanabe S, Hisashi Y, Moriyama Y, Taira A. Surgical repair of a solitary deep femoral arterial aneurysm: report of two cases. *Surg Today* 2000; 30:481-3.
5. Valiulis AP, Johnston KW. Isolated atherosclerotic aneurysm of the profunda femoris artery. *J Cardiovasc Surg (Torino)* 1980;21:498-500.
6. Ratto GB, Sacco A, Canepa G, Motta G. Atherosclerotic aneurysm of the deep femoral artery. *J Cardiovasc Surg*

- (Torino) 1984;25:574-6.
7. Levi N, Schroeder TV. Arteriosclerotic femoral artery aneurysms. A short review. *J Cardiovasc Surg (Torino)* 1997;38:335-8.
 8. Tait WF, Vohra RK, Carr HM, Thomson GJ, Walker MG. True profunda femoris aneurysms: are they more dangerous than other atherosclerotic aneurysms of the femoropopliteal segment? *Ann Vasc Surg* 1991;5:92-5.
 9. Burchi C, Cavallaro G, Amato D, Cavallaro A. Isolated true atherosclerotic aneurysm of the profunda femoris artery. Case Report. *J Cardiovasc Surg (Torino)* 1999;40: 577-81.
 10. Catalano C, Fraioli F, Laghi A, Napoli A, Bezzi M, Pediconi F, et al. Infra renal aortic and lower-extremity arterial disease: diagnostic performance of multi-detector row CT angiography. *Radiology* 2004;231:555-63.