Cystic adventitial disease of the popliteal artery

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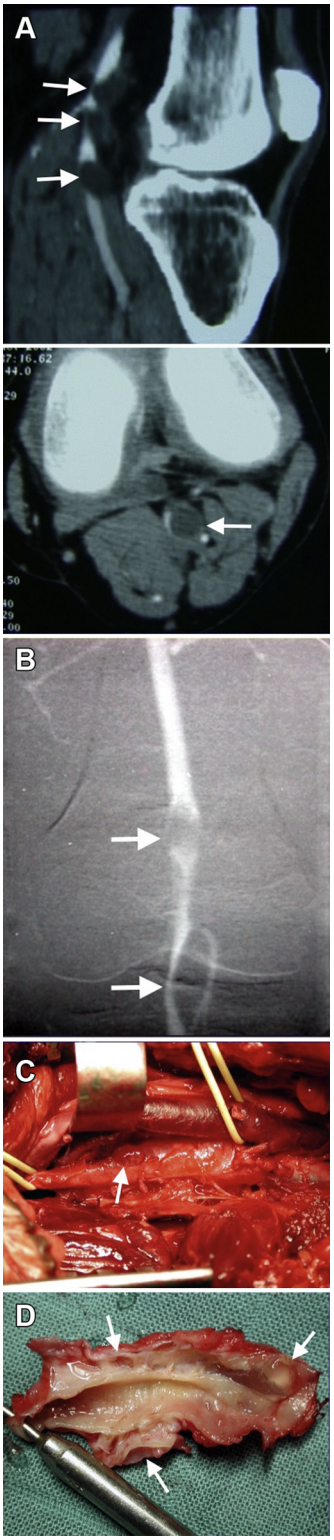
A 47-year-old man was admitted for progressively worsening calf cramp in the right leg while walking. No risk factors for vascular disease were identified, apart from some degree of hypercholesterolemia. He had no history of trauma in the right leg, and he participated in regular physical activity. The ankle-brachial index was 0.6 on the right side and 1.0 on the left side. On examination, no popliteal and distal arterial pulses were present in the right leg, whereas this arterial pulses were present in the left leg.

Duplex ultrasound examination and computed tomography scans performed 3 months after the onset of symptoms revealed a multilocular cystic formation within the right popliteal artery wall, determining a severe luminal stenosis. Therefore, a diagnosis of cystic adventitial disease was confirmed (*A*). In this case, a subsequent conventional angiography revealed a concentric compression of the popliteal artery by the cyst, with the characteristic hour glass sign (*B*).

The therapeutic approach was surgical first. The patient was placed in a supine position and the great saphenous vein was removed from the right leg via internal access. Second, the patient was placed prone, and a posterior approach was realized through an incision in the popliteal fossa. A multilocular cyst was identified (*C*) and resected, followed by a popliteal bypass reconstruction with autologous great saphenous vein. Clinical follow-up was free of symptoms. He remains asymptomatic with normal peripheral pulses 0.3 years after surgery, with an ankle- brachial index of 0.9. Histopathology showed a multilocular cystic adventitial disease interesting the popliteal artery wall (*D*). This cyst was located between the media and adventitia of the artery. and contained gelatinous material.

The patient (Mr M.B) agree to publish his case details and images, in all editions of the Journal of Vascular Surgery Publications and in any other publication, as well as in any advertising or promotional material for such product or publications.



DISCUSSION

Cystic adventitial disease is encountered predominantly in men, with an average male:female ratio of 15:1 and an incidence of 1:1200 in patients with claudication.[1] The etiology of cystic adventitial disease remains controversial. Four theories are proposed: degenerative, traumatic, synovial, and developmental. The adventitial cyst becomes incorporated into the vascular wall and its growth causes compression of the lumen. These cysts contain myxoid material rich in hyaluronic acid.[2]

In our case, the diagnosis was confirmed using Doppler ultrasound examination and computed tomography imaging; other pathologies were excluded, such as popliteal aneurysms and extrinsic compression from Baker's cysts,[3,4] false aneurysms, and

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popliteal entrapment syndrome. Angiography shows concentric compression with the characteristic hour glass sign, or excentric compression with the characteristic scimitar sign.

For cystic adventitial disease treatment, different techniques have been described, We can make an aspiration of the cyst under computed tomography or ultrasound guidance if arterial permeability is preserved.[5-7] Endovascular treatment of cystic adventitial disease is still an attractive technique. However, early follow-up is marked by high recurrence rates. Excision of the cyst is followed by high recurrence if enucleation is incomplete. However, we can obtain better results if the intimal wall is preserved and patchplasty is avoided.[8]

We believe that surgical treatment, including cystic adventitial disease resection, followed by a popliteal bypass reconstruction with autologous saphenous vein graft, is the best treatment with a low recurrence rate and complications,[6] and that this surgical option may lead to better results in cases with arterial occlusion.[6,9]

REFERENCES

1. Miller A, Salenius J-P, Sacks BA, Gupta SK, Shoukimas GM. Noninvasive vascular imaging in the diagnosis and treatment of adventitial cystic disease of the popliteal artery. J Vasc Surg 1997;26:715-20.
2. Flanigan DP, Burnham SJ, Goodreau JJ, Bergan JJ. Summary of cases of adventitial cystic disease of the popliteal artery. Ann Surg 1979;189:165.
3. Shute K, Rothnie NG. The aetiology of cystic arterial disease. Br J Surg 1973;60:397-400.
4. Brodmann M, Stark G, Pabst E, Seinost G, Schweiger W, Szolar D, et al. Cystic adventitial degeneration of the popliteal artery: the diagnostic value of duplex sonography. Eur J Radiol 2001;38:209-12.
5. Rosiak G, Milczarek K, Cieszanowski A, Rowinski O. Ultrasound-guided percutaneous aspiration of adventitial cysts in the occluded popliteal artery - clinical results and MR findings at 5-year follow-up. J Ultrason 2017;17:212e6.
6. Hernandez Mateo MM, Serrano Hernando FJ, Martinez Lopez I, et al. Cystic adventitial degeneration of the popliteal artery: report on 3 cases and review of the literature. Ann Vasc Surg 2014;28:1062e9.
7. Vento V, Faggioli G, Ancetti S, Sonetto A, et al. Cystic adventitial disease of the popliteal artery: radical surgical treatment after several failed approaches. A case report and review of the literature. Ann Vasc Surg. Dieng M, Mirelli M 2020;64:411.e5-11.
8. Kikuchi S, Sasajima T, Kokubo T, Koya A, Uchida H, Azuma N. Clinical results of cystic excision for popliteal artery cystic adventitial disease: long-term benefits of preserving the intact intima. Ann Vasc Surg 2014;28:1567.
9. Nemoto M, Hosaka A. Spontaneous regression of cystic adventitial disease of the popliteal artery: a case report. Ann Vasc Surg 2020;62:498.e11-3.

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