Images in
Cardiovascular Medicine

OPEN ACCESS

Received: Oct 23, 2017

Revised: Dec 7, 2017

Accepted: Dec 29, 2017

Correspondence to

Young Jin Youn, MD, PhD

Division of Cardiology, Department of Internal Medicine, Yonsei University Wonju College of Medicine, 20, Ilisan-ro, Wonju 26426, Korea.
E-mail: younyj@yonsei.ac.kr

Copyright © 2018. The Korean Society of Cardiology

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ORCID iDs

Sul Ki Han

<https://orcid.org/0000-0002-8294-3517>

Sang Wook Park

<https://orcid.org/0000-0003-4871-1461>

Jun-Won Lee

<https://orcid.org/0000-0001-6206-1704>

Sung Gyun Ahn

<https://orcid.org/0000-0002-1528-2739>

Young Jin Youn

<https://orcid.org/0000-0001-7066-7474>

Jin Rok Oh

<https://orcid.org/0000-0002-1729-9526>

Il Hwan Park

<https://orcid.org/0000-0001-8155-1880>

Intermittent Claudication due to Cystic Adventitial Disease of the Popliteal Artery: Importance of Multiple Imaging Modalities

Sul Ki Han , MD¹, Sang Wook Park , MD¹, Jun-Won Lee , MD¹,
Sung Gyun Ahn , MD, PhD¹, Young Jin Youn , MD, PhD¹, Jin Rok Oh , MD, PhD²,
and Il Hwan Park , MD, PhD³

¹Division of Cardiology, Department of Internal Medicine, Yonsei University Wonju College of Medicine, Wonju, Korea

²Department of Orthopedics, Yonsei University Wonju College of Medicine, Wonju, Korea

³Department of Cardiovascular and Thoracic Surgery, Yonsei University Wonju College of Medicine, Wonju, Korea

A 51-year-old male presented with intermittent claudication of the right calf for 1 year. The right ankle-brachial index at rest and during exercise was 0.96 and 0.87, respectively. Total occlusion of the right popliteal artery (PA) was detected on a volume-rendered three-dimensional computed tomography (CT) image (**Figure 1A**), but popliteal aneurysmal dilatation occluded by a hypoattenuating filling defect was revealed on a contrast-enhanced CT axial image (**Figure 1B**). Interestingly, an angiography revealed no significant stenosis at the lesion (**Figure 1C**). The intravascular ultrasound revealed no definite atherosclerosis but extravascular hypoechoic lesion compatible with a cyst (**Figure 1D**). Finally, the T2-weighted magnetic resonance imaging (MRI) (**Figure 1E**) revealed that multi-lobulated cysts (arrowheads) extending from the articular surface to the PA (arrow) encompassed the PA circumferentially. These findings were consistent with cystic adventitial disease (CAD). After excision of the cystic wall (**Figure 1F**, arrowheads), the medial layer of PA (**Figure 1F**, arrow) was exposed. The entire cyst and underlying PA were excised and replaced with a synthetic graft. At 6-month of follow-up, he remains free of symptoms.

CAD is a rare non-atherosclerotic vasculopathy where mucinous cyst forms within the adventitia of the arteries and veins.¹⁾ This can cause luminal narrowing and various symptoms depending on the vessel affected. The etiology of CAD remains unclear but articular (synovial) theory appears most well-founded.²⁾ The MRI in our case also demonstrated that cysts connected with the knee joint. This joint connection could explain the mechanism of the symptom and the discrepancy between the CT and angiography findings. Instead of a graft, simplified treatment such as joint connection ligation could be done if we had a better understanding of the etiology of CAD. Our case highlights the importance of multi-modality images to make a differential diagnosis in a patient with intermittent claudication and define the etiology of CAD.

Figure 1. The discrepancies among imaging modalities and surgical finding in patient with cystic adventitial disease. Total occlusion of the right PA was suspected on a volume-rendered three-dimensional CT image (A) but popliteal aneurysmal dilatation occluded by a hypoattenuating filling defect was revealed on a contrast-enhanced CT axial image (B). On contrary to the CT finding, a conventional angiography revealed no significant stenosis at the lesion (C). The IVUS revealed no definite atherosclerosis but extravascular hypoechoic lesion compatible with a cyst (D). Finally, the T2-weighted MRI revealed that multi-lobulated cysts (E, arrowheads) extending from the articular surface to the PA (E, arrow) encompass the PA circumferentially. After excision of the cystic wall (F, arrowheads), the medial layer of PA (F, arrow) was exposed.

CT = computed tomography; IVUS = intravascular ultrasound; MRI = magnetic resonance image; PA = popliteal artery.

Conflict of Interest

The authors have no financial conflicts of interest.

Author Contributions

Validation: Lee JW, Ahn SG, Oh JR, Park IH.
Writing - original draft: Han SK. Writing - review & editing: Park SW, Youn YJ.

REFERENCES

1. Atkins HJ, Key JA. A case of myxomatous tumour arising in the adventitia of the left external iliac artery; case report. *Br J Surg* 1947;34:426-7.
[PUBMED](#) | [CROSSREF](#)
2. Desy NM, Spinner RJ. The etiology and management of cystic adventitial disease. *J Vasc Surg* 2014;60:235-45, 245.e1-11.
[PUBMED](#) | [CROSSREF](#)