



Case Report

Common Femoral Artery Aneurysm : A Challenging Diagnostic and Treatment of a Rare Case

Ayu Asri Devi Adityawati^{1*}, Novi Kurnianingsih², Budi Satrijo², Indra Prasetya²

¹ Brawijaya Cardiovascular Research Center, Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

² Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

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ABSTRACT

Background: Aneurysm of the peripheral artery is a rare vascular pathology, especially aneurysm in the common femoral artery. Here, we presented a case report of a right common femoral artery aneurysm caused by infection. **Objective:** This case report is aimed to explore further about the diagnosis process of rare cases in peripheral arteries to elaborate proper treatment for patients with this condition.

Case Presentation: a 76-year-old man was referred to our hospital with a pulsatile groin mass at his right thigh. He had no prior history of surgery or traumas, but he has been treated in a private hospital due to septic condition, hypertension, and type II diabetes mellitus. A diagnosis of a common femoral artery aneurysm was made based on findings from physical examination and radiology examination. The patient was referred to the Cardiovascular and Thoracic Surgeon Department and scheduled for routine surgery, but on the third day of admission patient became hemodynamically unstable, and on re-examination, the aneurysm was found had been ruptured. Emergency surgery was conducted on that day. During surgery, the patient was hemodynamically stable with PRC transfusion. The result of aneurysm excision and the bypass was remarkable.

Conclusion: The common femoral artery aneurysm is uncommon. When a femoral artery aneurysm is suspected, a search for such aneurysms should be conducted. In this kind of patient, straightforward surgical management yields positive outcomes.

1. Introduction

An aneurysm can occur in various locations in our body, one of which is the peripheral artery, contributing 4,6% percent of all aneurysms. Common femoral artery (CFA) aneurysm is one of the peripheral artery aneurysms, a rare vascular system pathology.¹ From Piffaretti's report in Italia over 20 years, between January 1988 until December 2009, only 35 femoral artery aneurysm patients found 20 of which had common femoral artery aneurysm.² In the literature, there are still few reports on this vascular system pathology like CFA aneurysm.³ As a result, its diagnosis and treatment remain a severe clinical problem.¹ Femoral artery aneurysms are usually found in older adults with a history of smoking, hypertension, or diabetes mellitus.

The etiology of the arterial aneurysm can be mainly caused by the arteriosclerotic condition, or an infected aneurysm called a mycotic aneurysm.⁴ There are very few incidences of isolated true femoral artery aneurysms found. Therefore, there is limited information available to assess its incidence, mode of presentation, and natural history.⁵ To obtain a thorough diagnostic and establish appropriate therapeutic measures, we should be able to distinguish various

aneurysm etiology. Here we present a case of a rare common femoral artery aneurysm due to a mycotic aneurysm in this case report.

2. Case Presentation

The patient was a 76 years old male, a smoker since he was young with arterial hypertension and poorly controlled type II diabetes mellitus. He had no prior history of surgery or traumas, but he has been treated due to septic condition, hypertension, and type II diabetes mellitus. During treatment in a private hospital, he felt pulsatile groin mass and a local pain that worsened day by day. Then, he was referred to our hospital for further assessment and management.

From the physical examination, he had stable hemodynamic without any previous history of inotropic and vasopressor administration. Pulmonary and cardiac auscultation was normal. The abdominal examination was unremarkable. The local examination in his right lower limb shows a swelling (right thigh circumference was 58 cm, left thigh circumference was 44 cm). The pulsation can be felt on his thigh accompanied by localized pain. All arterial pulses were present.

*Corresponding author at: Brawijaya Cardiovascular Research Center, Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia
E-mail address: dokterdevi@gmail.com (A.A.D. Adityawati).

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Signs of infection were found during laboratory examination. Leukocytosis, elevated CRP, procalcitonin, and bacteremia were found in his urinalysis. Type 2 Diabetes Mellitus was confirmed by HbA1c elevation, and there were abnormalities found in the renal function test. Further investigation was conducted with Doppler ultrasound of the arteries. We found the right common femoral artery aneurysm with differential diagnosis pseudoaneurysm without any deep venous thrombosis. Further examination with lower extremity CT angiography found a multilocular saccular type aneurysm at right common femoral artery with neck width 12.2 mm, dome width 10.03cm, dome height 6.04 cm, and there was a daughter aneurysm (5.6 x 7.4 cm) (Figure 1).

The patient was referred to the Cardiovascular and Thoracic Surgeon Department and was scheduled for routine surgery. During two days of observation, the patient was clinically stable, but on the third day, there was hemodynamic instability. The patient became pale and experienced a decrease in consciousness. Laboratory examination

was done, and there was a 3-point drop of hemoglobin from the baseline value. A re-assessment was done, and we found that the aneurysm in the common femoral artery had ruptured, and we decided to conduct an emergency surgery on that day. The incision was made in the femoral region. Aneurysm rupture at the right common femoral artery was found. Clot evacuation and end-to-end anastomosis were performed. The wound was sutured during surgery. The patient was hemodynamically stable during the operation with PRC transfusion during surgery.

3. Discussion

In descending order of incidence, aneurysms most commonly occur in the abdominal aorta, thoracic aorta, cerebral veins, and iliac, popliteal, and femoral arteries.¹ Femoral artery aneurysm was rare. Therefore only a few pieces of literature can be found. Even fewer kinds of literature were found for common femoral artery aneurysms.²



Figure 1. Lower extremity CTA. (A) 3D reconstruction found a saccular type aneurysm with a daughter. (B) There was an aneurysm found in the right common femoral artery during the 2D CTA examination. CTA = computed tomography angiography.



Figure 2. Patient clinical presentation. (A) Left and right lower extremity. The right thigh circumference was larger than the left thigh on the first day of admission at Saiful Anwar General Hospital. (B) Progression at right thigh on the third day of admission.

The diagnostic procedure with various modalities was needed to establish a precise diagnosis for the patient who comes with swelling in his/her lower extremity. The physical examination cannot be abandoned. Doppler ultrasound was conducted to find a saccular mass with neck and a yin and yang phenomenon, narrowing the differential diagnosis to pseudoaneurysm or aneurysm.⁶ Doppler ultrasound can also help to eliminate the possibility of tumors or cysts. Subsequent CT angiography confirmed the involvement of three layers of the arterial wall as a sign of an aneurysm.^{6,7} The final diagnosis was a saccular type aneurysm at the right CFA before it ruptured on the third day of admission. Culture is not recommended to find the cause of infection because 50% of infected aneurysms have a negative culture,^{8,9} even though other findings from physical examination and laboratory marker show marked infection. Femoral artery aneurysms may grow large and cause symptoms such as limb-threatening ischemia, embolization, or tissue loss if they thrombose; however, rupture is uncommon. While it is mostly asymptomatic, it can cause local pain, distal embolization, fracturing, and venous compression.¹⁰ In this case, the patient underwent acute limb ischemia comorbid with sepsis which needs urgent surgical management.

The treatment of mycotic aortic aneurysms is also a difficult task. Many things influence the outcome of surgery. The type of aneurysm, its venue, the mode of presentation, the responsible microbe, antibiotic treatment, and surgical treatment are critical considerations. Patients with a mycotic aortic aneurysm are well-known for having poor general health.⁶ When an aneurysm is symptomatic, surgical reconstruction is an alternative, and it can also be considered whether there is continuing hemodynamic dysfunction or limb ischemia. Controlling the artery proximally and distally and primary reconstruction of the arterial defect are surgical criteria. When hemorrhagic shock occurs, the bleeding site should be digitally compressed first, then artery intervention and primary arteriography should be done. In broad aneurysms, a retroperitoneal incision can be necessary to gain access to the external iliac artery. If the main patch fails, a vein graft can be used to rebuild the arterial structure.¹¹ In this case, a straightforward operation should be done after the diagnosis was established in the symptomatic patient.

3. Conclusion

Aneurysms of the CFA are not common but are very rarely isolated. Usually, they do not rupture. Embolization is rare as well. Commonly, they are asymptomatic and sometimes present late with other complications from the aneurysm. When a femoral artery aneurysm is suspected, a search for such aneurysms should be conducted. In this kind of patient, straightforward surgical management yields positive outcomes.

4. Declarations

4.1. Ethics Approval and Consent to participate

Patient has provided informed consent prior involvement in the study.

4.2. Consent for publication

Not applicable.

4.3. Availability of data and materials

Data used in our study were presented in the main text.

4.4. Competing interests

Not applicable.

4.5. Funding source

Not applicable.

4.6. Authors contributions

Idea/concept: AADA. Design: AADA. Control/supervision: NK. Data collection/processing: AADA. Extraction/Analysis/interpretation: AADA. Literature review: BS, IP. Writing the article: AADA. Critical review: NK, BS, IP. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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