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Multiple Atherosclerotic Aneurysms of the Abdominal Aorta and Lower-Limb Arteries: A Case Report

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Abstract

Multiple aneurysms, defined as more than three concurrent arterial dilatations, are common and occur in approximately one in six patients with a primary aneurysm. They predominantly affect men over 50 years of age, and smoking is an important risk factor. The coexistence of multiple aneurysms presents a clinical and surgical challenge, increasing the risk of rupture and mortality. This report describes a case of atherosclerotic multiple aneurysms involving the abdominal aorta and the peripheral arteries of the lower limbs.

Keywords: Aneurysm, Aortic Aneurysm, Popliteal Artery Aneurysm, Peripheral Arterial Disease, Atherosclerosis.

Introduction

Aneurysmal disease is common, and its pathophysiology is associated with the degeneration of elastin and collagen. The aorta is the artery most commonly affected [1, 2]. The occurrence of aneurysmal dilatations at multiple sites is common and well documented in the literature. This includes bilateral involvement of the same artery, particularly the popliteal artery, for which bilateral aneurysmal dilatation occurs in approximately 50% of cases [3, 4]. Atherosclerosis is the leading cause of multiple aneurysms in older patients. However, other etiologies, including genetic, infectious, and inflammatory causes, should also be considered [5, 6]. The aim of this case report was to describe a patient with atherosclerotic disease and multiple aneurysms involving visceral, abdominal, and lower-limb arteries. The study protocol was approved by the Research Ethics Committee of XXXXX University (approval number: 7.040.483).

Case Report

A 70-year-old man presented to the emergency department with severe pain in his right lower limb, which had begun seven days earlier. He described an episode of acute pain followed by loss of sensation and movement in his foot. He was a smoker, with a 100 pack-year smoking history, had hypertension, and had chronic kidney disease requiring dialysis. Before the onset of acute pain, he had experienced bilateral claudication after walking 200 m, as well as gluteal claudication and erectile dysfunction, corresponding to Rutherford category 3. Physical examination revealed right foot drop, absent dorsiflexion, pallor, coldness, and absent distal pulses. Pulsatile masses were palpated in both popliteal fossae. The initial diagnostic hypothesis was distal acute arterial occlusion caused by embolization from a popliteal artery aneurysm.

Contrast-enhanced arterial-phase computed tomography angiography of the abdomen and lower limbs revealed multiple fusiform aneurysmal dilatations involving the aorta, visceral arteries, iliac arteries, and arteries of the lower limbs. There was a fusiform dilatation of the infrarenal aorta, with a maximum diameter of 4.7 cm, and a fusiform dilatation of the left renal artery, measuring 1.1 cm. The right and left external iliac and common femoral arteries showed fusiform dilatations measuring 6.0 cm, 4.8 cm, 5.2 cm, and 4.8 cm, respectively. At the femoropopliteal transition, sequential thrombosed dilatations were present bilaterally, with maximum diameters of 4.3 cm on the right and 4.8 cm on the left. In total, 10 arterial territories were affected by aneurysmal dilatation (Figures 1 and 2).

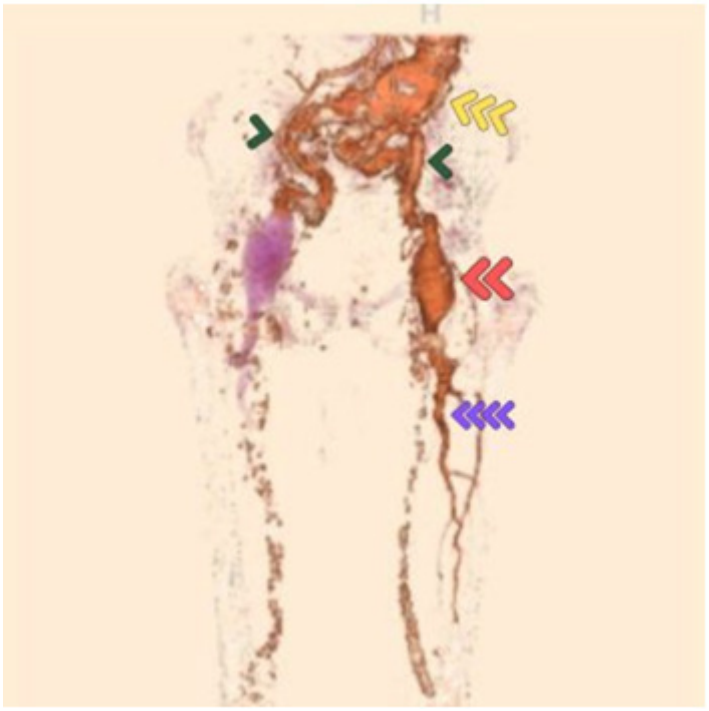


Figure 1: Serial frontal-plane volume-rendered computed tomography angiography images showing a tortuous infrarenal abdominal aortic aneurysm (triple arrow), right and left external iliac artery aneurysms (single arrows), a left femoral artery aneurysm (double arrow), and a left superficial femoral artery aneurysm (quadruple arrow).

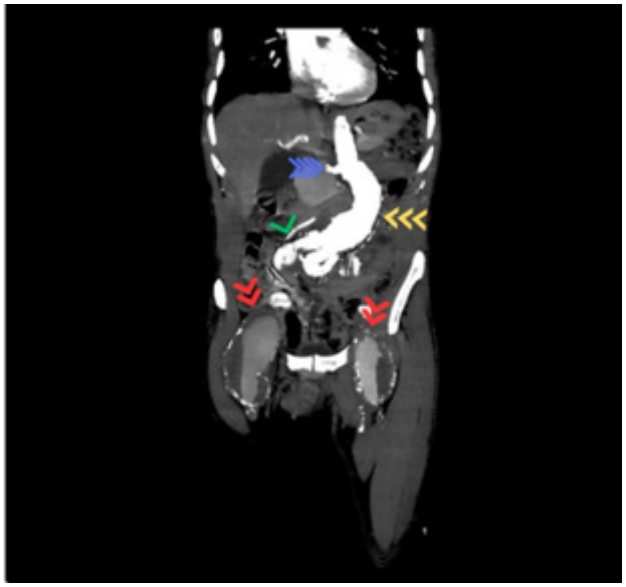


Figure 2: Frontal-plane abdominal-window computed tomography angiography image showing a tortuous infrarenal abdominal aortic aneurysm (triple arrow), a right renal artery aneurysm (quadruple arrow), a common iliac artery aneurysm (single arrow), and right and left femoral artery aneurysms (double arrows).

Because the right lower limb was deemed nonviable, transfemoral amputation was performed at admission. Arterial biopsy was not performed during surgery to investigate the possibility of vasculitis. The patient's hospital course was uneventful, and he was discharged on the fifth day after admission. He was referred for outpatient follow-up with the vascular surgery service, with periodic imaging surveillance, further etiological investigation, and surgical planning for aneurysms meeting intervention criteria. During one year of follow-up, with visits every three months, no aneurysmal growth was observed. The patient received medical treatment for peripheral arterial disease (PAD) and risk-factor management for atherosclerotic disease.

Discussion

Multiple arterial aneurysmal disease affects 6.5% of patients with arterial aneurysms. In 1971, used the term *arteriomegaly* to describe this condition [7]. The predominant etiology is degenerative, resulting from either atherosclerosis or connective tissue disorders. Other causes include hereditary syndromes and connective tissue diseases, such as Marfan syndrome, Loeys–Dietz syndrome, and type IV Ehlers–Danlos syndrome; the early onset of aneurysms, as seen in noninfectious vasculitides such as Takayasu arteritis, Behçet disease, and Kawasaki disease; and a history of infectious diseases, such as tertiary syphilis [8, 9].

In the present case, aneurysmal dilatation affected 10 arterial territories. The aneurysms were identified when the patient was 70 years old and had previously been asymptomatic. The patient had several risk factors for atherosclerotic disease, including smoking and hypertension. Chronic kidney disease should also be noted, as it is associated with reduced collagen content in the arterial wall due to the action of metalloproteinases [10]. Noted that the coexistence of visceral artery aneurysms and abdominal aortic aneurysms is rare in patients without genetic syndromes or connective tissue disorders [11]. Because an arterial biopsy was not performed, connective tissue disease could neither be confirmed nor excluded. However, the patient had no clinical signs suggestive of such disorders, such as pain, joint swelling, fatigue, muscle weakness, or Raynaud phenomenon.

In several countries, large-scale population screening for abdominal aortic aneurysm (AAA) has been implemented. The guidelines of the Brazilian Society of Angiology and Vascular Surgery (SBACV) recommend abdominal ultrasonographic screening for all men over 65 years of age, while the evidence supporting screening in women is limited. AAA prevalence is reported to be 5–6% in men and 1–2% in women.The occurrence of AAA appears to decrease as the total number of aneurysms increases. Interestingly, the opposite pattern has been observed for peripheral aneurysms. According to Hall, Minc, and Babrowski, when a peripheral aneurysm is discovered incidentally, other aneurysms should be sought in the contralateral limb and at other sites, given the high incidence of concurrent aneurysms.

The association between AAA and peripheral aneurysms is well described in the literature. In the present case, the patient had peripheral aneurysms associated with AAA, including common femoral artery (CFA) and popliteal artery (PA) aneurysms. AAA is associated with iliac artery aneurysms (IAAs), CFAs, and PAs. These aneurysms are generally described as degenerative or atherosclerotic in origin. Structural weakness of the arterial wall predisposes it to dilatation and, consequently, to the development of concurrent aneurysms. Approximately 30–40% of patients with CFA aneurysms are asymptomatic. According to the literature, common and external iliac artery aneurysms are considered very rare. External iliac artery aneurysms are generally associated with trauma or nondegenerative causes. The external iliac artery is considered highly resistant to aneurysmal degeneration. In this patient, an external iliac artery aneurysm was present in the distal third, extending to the femoral transition.

Similarly, PA aneurysms are associated with AAA and are often found concomitantly. PA aneurysms are the most common peripheral aneurysms, accounting for approximately 70–85% of peripheral aneurysms; they are bilateral in 50% of cases. Their clinical presentation is generally associated with distal thromboembolic events, as occurred in this case. According to the literature, conservative management with periodic ultrasonographic surveillance is appropriate for this patient's renal artery aneurysm and infrarenal AAA, with annual surveillance recommended for AAA, alongside risk-factor modification. By contrast, the diameters of the asymptomatic peripheral iliac aneurysms exceed the threshold for conservative management, and surgical repair is indicated. The aneurysm at the left femoropopliteal transition also meets the criteria for surgical intervention. The patient did not undergo repair of these aneurysms during this admission and was referred for elective treatment planning. Note that surgical intervention is indicated for aneurysms measuring more than 3 cm in the iliac arteries and more than 2.5 cm in the femoral arteries.

Given the number of arterial territories affected in this patient, screening for intracranial aneurysms could be considered, although it is not part of standard protocols, since the reported co-prevalence of intracranial and aortic aneurysms is 9.3%. This is an unusual case, with no similar reports identified in the literature. The reasons why so many arterial sites are affected remain uncertain and unclear.

Conclusion

The coexistence of aneurysms at multiple sites is well documented in the literature. However, this case demonstrates a notably large number of aneurysmal sites in a single patient and prompts consideration of current protocols for investigating concurrent aneurysms and managing these cases.

Conflicts of interest: The authors declare that they have no conflicts of interest to disclose.

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Author Information

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POGR, RAF, CZF, and MCSM are medical students at the Federal University of Rio Grande (FURG).

Author Contributions

Study conception and Design: MFBFR.

Data analysis and Interpretation: MFBFR, POGR, RAF, CZF, MCSM.

Data collection: POGR, MCSM.

Drafting of the Manuscript: MFBFR, POGR, RAF, CZF, MCSM.

Critical revision of the Manuscript: MFBFR, POGR.

Final approval of the Manuscript: MFBFR, POGR, RAF, CZF, MCSM.

Statistical analysis: Not applicable.

Overall responsibility for the Study: MFBFR.

The study was conducted at Hospital Santa Casa do Rio Grande, Rio Grande, RS, Brazil.

The study protocol was approved by the Research Ethics Committee of the Federal University of Rio Grande (FURG) (approval number: 7.040.483).

Data Availability Statement: All data generated or analyzed are included in this article and/or its supplementary material.

References

1. Schill, C. N., Tessier, S., Longo, S., Ido, F., Nanda, S. (2022). Differential diagnosis of multiple systemic aneurysms. Cureus, 14(10), e30043. https://doi.org/10.7759/cureus.30043.
2. Maffei, F. H. de A. (2014). Aterosclerose. In F. H. de A. Maffei et al., Doenças vasculares periféricas (5th ed., pp. 2273–2276). Guanabara Koogan.
3. Lemos, M., Silva, I., Almeida, R. (2019). Multiple aneurysmal disease: A review. Angiologia e Cirurgia Vascular, 15(2), 86–89. https://acvjournal.com/index.php/acv/article/view/227.
4. van Laarhoven, C. J. H. C. M., Jorritsma, N. K. N., Balderston, J. (2021). Systematic review of the co-prevalence of arterial aneurysms within the vasculature. European Journal of Vascular and Endovascular Surgery, 61(3), 473–483. https://doi.org/10.1016/j.ejvs.2020.10.002.
5. Norman, P. E., Powell, J. T. (2010). Site specificity of aneurysmal disease. Circulation, 121(4), 560–568. https://doi.org/10.1161/CIRCULATIONAHA.109.880724.
6. Körfer, D., Erhart, P., Wortmann, M., (2023). Characteristics of patients with multiple arterial aneurysms. Vasa, 52(2), 119–123. https://doi.org/10.1024/0301-1526/a001050.
7. Andreucci, M., Provenzano, M., Faga, T. (2021). Aortic aneurysms, chronic kidney disease and metalloproteinases. Biomolecules, 11(2), 194. https://doi.org/10.3390/biom11020194.
8. Tanaka, C. M., Matielo, M. F., Nakamura, E. T., Tiossi, S. R. (2022). Bilateral external iliac artery aneurysm in a young man. Journal of Vascular Surgery Cases, Innovations and Techniques, 8(1), 57–59. https://doi.org/10.1016/j.jvscit.2021.12.006.
9. Hall, H. A., Minc, S., Babrowski, T. (2013). Peripheral artery aneurysm. Surgical Clinics of North America, 93(4), 911–923. https://doi.org/10.1016/j.suc.2013.04.008.
10. Mulatti, G. C., Joviliano, E. E., Pereira, A. H. (2023). Brazilian Society for Angiology and Vascular Surgery guidelines on abdominal aortic aneurysm. Jornal Vascular Brasileiro, 22, e20230040. https://doi.org/10.1590/1677-5449.202300402.
11. Wang, Y., Li, C., Xin, H., Li, J., Wang, H. (2019). Predisposing factors for migration of the iliac limb and reintervention after endovascular abdominal aortic aneurysm repair. Annals of Vascular Surgery, 59, 91–101. https://doi.org/10.1016/j.avsg.2019.01.007.

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