World Journal of Cardiovascular Diseases, 2026, 16(2), 100-105
https://www.scirp.org/journal/wjcd
ISSN Online: 2164-5337
ISSN Print: 2164-5329

Arteria Lusoria an 80-Year-Old Patient: A Case Report

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How to cite this paper: Bianza, J.R., Mongo-Ngamami, S.F., Makani-Bassakouahou, J.K., Moyikoua, R.F., Kouikani, F.Y., Ikama, M.S. and Ellenga-Mbolla, B.F. (2026) Arteria Lusoria an 80-Year-Old Patient: A Case Report. *World Journal of Cardiovascular Diseases*, **16**, 100-105.
https://doi.org/10.4236/wjcd.2026.162011

Received: December 4, 2025
Accepted: February 22, 2026
Published: February 25, 2026

Abstract

We report the case of an 80-year-old hypertensive patient who suffered an ischemic stroke. He was asymptomatic, and clinical examination revealed blood pressure asymmetry with arterial hypertension in the left arm (BP = 170/94 mmHg) and arterial hypotension in the right arm (BP = 83/62 mmHg). Doppler ultrasound of the supra-aortic trunks showed an alteration of flow in the right subclavian artery. CT angiography revealed a retroesophageal course of the right subclavian artery with significant stenosis.

Keywords

Blood Pressure Asymmetry, Stenosis, Subclavian Artery, Esophagus

1. Introduction

Atherosclerotic stenoses of the subclavian artery are common abnormalities [1]. However, congenital causes such as the retroesophageal right subclavian artery, also called "arteria lusoria," are rarer [2].

The human aortic arch normally gives rise to three vascular branches: the brachiocephalic trunk, the left common carotid artery, and the left subclavian artery. However, in the arteria lusoria configuration, four arterial trunks arise sequentially from the aortic arch: the right common carotid artery, the left common carotid artery, the left subclavian artery, and the aberrant right subclavian artery (ARSA). There is no brachiocephalic trunk. The aberrant subclavian artery ap-

pears as the last branch of the aortic arch and arises directly from the aorta [3]. In 80% to 84% of cases, it ascends and passes behind the esophagus; its oblique course upward and to the right crosses the posterior surface of the esophagus at the level of the 2nd, 3rd, or 4th thoracic vertebra. In 12.7% to 15% of cases, it passes between the trachea and the esophagus, and in 4.5% to 5% of cases, it passes in front of the trachea [4]. It is the most common congenital anomaly of the aortic arch [2] [5] and is reported to be found in 0.4% to 2% of cases in the general population [6]. Asymptomatic in 90% to 93% of cases, arteria lusoria may present with dysphagia [2] [7] or dyspnea and cough. Some cases are discovered at autopsy [2].

2. Case Report

This was an 80-year-old hypertensive patient who had been followed for several years by a general practitioner. His maintenance treatment consisted of perindopril 5 mg and amlodipine 5 mg. He presented in 2021 with an extensive ischemic stroke in the left superficial middle cerebral artery territory, treated with aspirin 100 mg and rosuvastatin 5 mg.

He was referred to the cardiology outpatient clinic of Bacongo Referral Hospital for management and follow-up of hypertension.

The patient did not complain of arm claudication, tingling, or heaviness. There was also no dyspnea or swallowing disorder.

Clinical examination revealed blood pressure asymmetry with arterial hypertension in the left arm (BP = 170/94 mmHg) and arterial hypotension in the right arm (BP = 83/62 mmHg). Heart sounds were regular, with no added sounds (HR = 65 bpm). Peripheral pulses, radial and humeral, were diminished on the right. There was no bruit on auscultation of the vascular axes. Sensory and motor function of the right upper limb was preserved. The suspected diagnosis was severe stenosis of the right subclavian artery.

Doppler ultrasound of the supra-aortic trunks showed normal caliber and walls of the right subclavian artery, with demodulated arterial flow, indicative of decreased blood flow in the right subclavian artery (**Figure 1**).

There were no abnormalities of the walls or caliber of the aorta in its descending thoracic and abdominal portions.

CT angiography of the aorta and supra-aortic trunks showed:

On the right:

The common, internal, and external carotid arteries were patent, with regular walls and normal calibers.

The vertebral artery was opacified only at the level of its proximal part (V1) before its passage into the vertebral canal, then reappeared faintly opacified at the level of its distal precranial segment.

At the level of the subclavian arteries:

A moderate stenosis of the right subclavian artery extending over 40 mm, estimated at approximately 68%, was noted, secondary to a retroesophageal right subclavian artery (**Figure 2**).

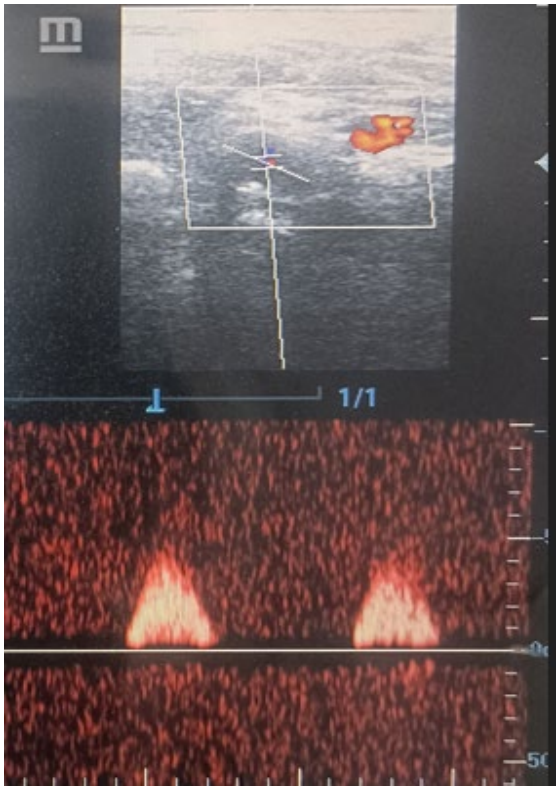
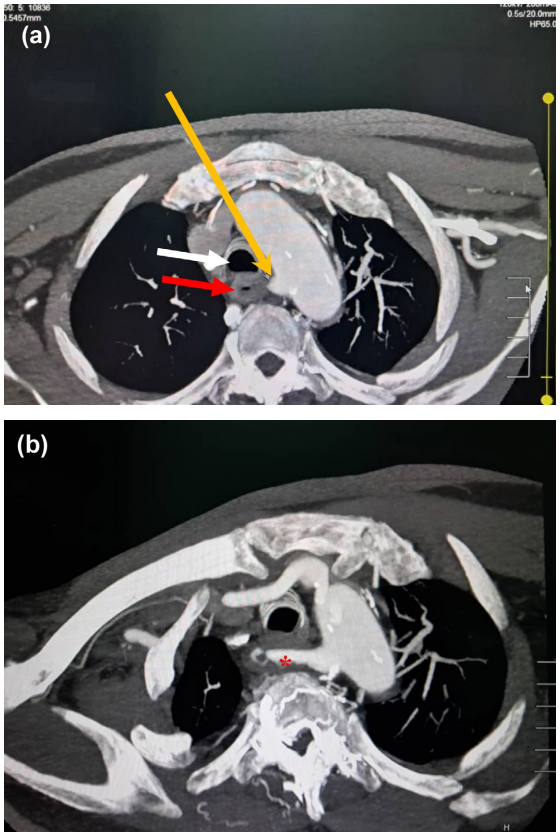


Figure 1. Right subclavian artery in longitudinal section, B-mode and color, showing demodulated flow on pulsed Doppler.



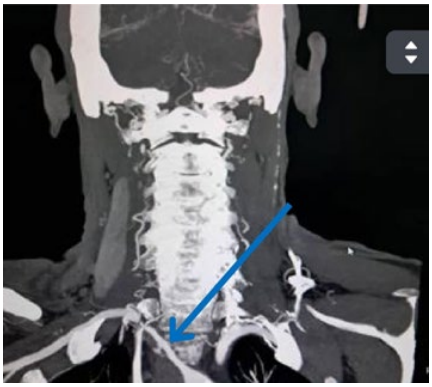


Figure 2. CT angiography of the thoracic aorta and supra-aortic trunks: (a): Axial MIP slice passing through the second thoracic vertebra showing the origin of the ARSA (yellow arrow) directly from the aortic arch (Esophagus: red arrow; Trachea: white arrow); (b): Passage of the ARSA behind the esophagus (red asterisk); (c): Coronal MIP reconstruction centered on the stenosed aberrant ARSA (blue arrow).

Normal patency of the humeral and axillary arteries.

As the patient was asymptomatic, surgical treatment was not indicated. Management consisted of treating comorbidities.

3. Discussion

Arteria lusoria appears more frequently in women [3] [8].

Our case involves a male subject, as do the two cases reported in Madagascar by TH Andrianjakamanana *et al.* [4].

The age at diagnosis is highly variable and later when it is asymptomatic, as in the case of our patient. The diagnosis is often incidental during investigations for other conditions [9] or during the workup of an ischemic stroke.

Dysphagia is a frequently revealing symptom. Exceptionally, signs of ischemia of the right upper limb may appear [8].

In our case, significant blood pressure asymmetry with decreased radial and humeral pulses led to suspicion of severe stenosis of the right subclavian artery, prompting CT angiography of the supra-aortic trunks, which is the key diagnostic examination. In our patient, there was arterial hypertension in the left arm and arterial hypotension in the right arm. This arterial hypotension most likely resulted from the significant stenosis of the aberrant right subclavian artery, estimated at 68% on CT angiography, with Doppler analysis of the right subclavian artery showing demodulation of arterial flow, indicative of decreased blood flow in the artery.

In our patient's case, stenosis was found after the origin of the aberrant ARSA, whereas in most cases, the frequently associated vascular anomalies are a bicarotid trunk (truncus bicaroticus), a Kommerell's diverticulum, an aneurysm, or aneurysmal degeneration of Kommerell's diverticulum [2] [3] [10].

The patient is asymptomatic, surgery is not indicated. Surgical intervention is required for anatomical restoration of orthograde flow in the subclavian artery in

the presence of disabling symptoms such as dysphagia due to compression of the esophagus by the aberrant ARSA, or in the presence of a Kommerell's diverticulum or aneurysm. Several treatment options exist for an aberrant ARSA. Currently, three main surgical options are available for the repair of an aberrant subclavian artery: open repair, thoracic endovascular repair, and hybrid repair. The choice of approach depends on the vascular anatomy and patient characteristics: size, symptoms, severity, and morphology [2] [3] [10] [11].

Given the advanced age of the patient and the absence of symptoms, surgery is not indicated. We limited management to treatment of his arterial hypertension while taking into account the arterial hypotension observed when measuring blood pressure in the right arm. A further significant decrease in blood pressure in the right arm could cause symptoms of ischemia in the affected arm, such as numbness or cramping, due to insufficient blood flow [2].

4. Conclusion

Arteria lusoria is a rare congenital vascular malformation and the most common anomaly of the aortic arch. Asymptomatic in most cases, its discovery is often incidental during additional examinations for other conditions, and sometimes during autopsy. Blood pressure asymmetry is frequently the sign leading to diagnosis. The contribution of vascular imaging is crucial. Surgical treatment is indicated only when the anomaly is symptomatic.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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