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Case Report

When Arteria lusoria meets Truncus bicaroticus: one of the rarest combinations of aortic arch anomalies ☆

Oussama Marsafi, Second year resident (Radiology), Zakaria Chahbi, First year resident (Radiology), Soukaina Wakrim, Professor (Radiology)*

Department of Radiology, Faculty of Medicine and Pharmacy, University Hospital of Souss Massa, Ibn Zohr Agadir University, Agadir, Morocco

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ABSTRACT

The Arteria lusoria or aberrant right subclavian artery (ARSA) constitutes one of the rarest malformations of the aortic arch, it can be associated with other congenital anomalies of the heart and large vessels, in particular the bi-carotid trunk or common origin of the carotid arteries (COCA) which is the presence of a single branch from the aorta giving off both right and left common carotid arteries. We report the case of a patient followed for severe mitral stenosis, and hospitalized for an ischemic cerebral vascular accident, a chest CT scan was performed in front of her clinical and biological degradation, which allowed the fortuitous discovery of an Arteria lusoria (aberrant retro-**esophageal**artery) associated with a Truncus bicaroticus.

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* *Corresponding author*.
E-mail address: Marsafi.oussama@gmail.com (O. Marsafi).

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Introduction

Branching of the great vessels from the aorta normally progresses with the brachiocephalic trunk as the first takeoff followed by the left common carotid and left subclavian artery in approximately 85% of cases [1], the aortic arch and its branches can be the site of anatomical variations. The most common anomaly concerns the right subclavian artery which originates directly from the aorta and thus join the right upper limb by taking an aberrant path, and may be associated in 30% of cases with a Truncus bicaroticus [2]. It is most often asymptomatic and discovered incidentally.

Clinical presentation

We report the case of a 55-year-old adult women admitted for an ischemic cerebral vascular accident, she presented a fever with clinical degradation, her infectious assessment was positive without identification of an infectious foci, which motivated the realization of a thoracic scan as part of her diagnostic assessment, the patient was followed for mitral stenosis, without any notion of taking drugs or medicinal plants, and without any toxic habits.

On clinical examination, we find a feverish patient (38.8°) hemiplegic and aphasic, conscious (Glasgow Score 15/15), normocardium (Heart rate 79 beats/min), normotensive and normopneic (Respiratory rate 17 Cycles/min), without other particular pathological signs.

The patient underwent chest CT scan with injection of contrast product, which revealed the presence of an Arteria lusoria Figs. 1-4 associated with a Truncus bicaroticus Figs. 5-7.

The diagnosis of acute pyelonephritis was subsequently confirmed on a pathological urine test.

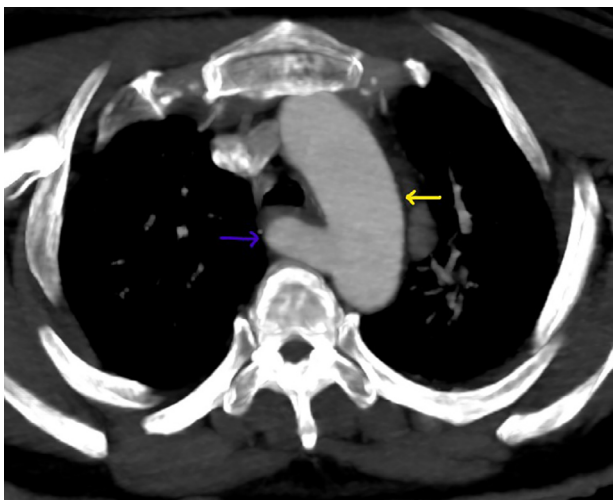

Fig. 1 – Postcontrast computed tomography—angiography axial image demonstrates the presence of an Arteria lusoria (aberrant right subclavian artery) (blue arrow) which originates from the aortic arch (yellow arrow).

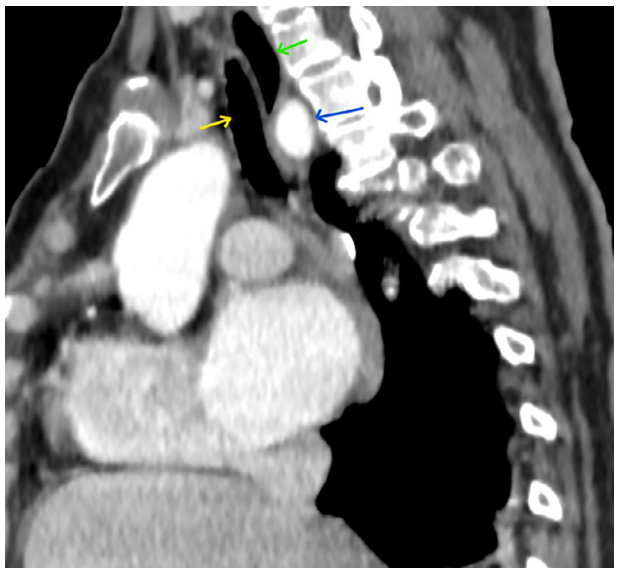

Fig. 2 – Postcontrast computed tomography—angiography sagittal image shows an arteria lusoria (aberrant right subclavian artery) (blue arrow) / esophagus (green arrow)/ trachea (yellow arrow).

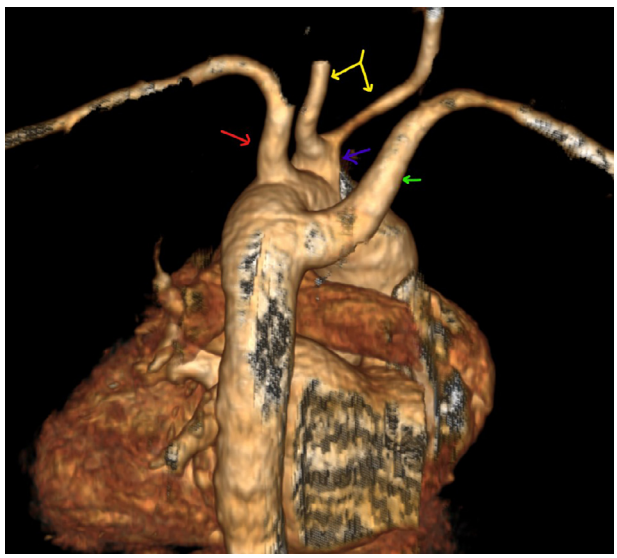

Fig. 3 – Posterior view of a CT angiogram with 3D reconstruction showing a common origin (blue arrow) of bilateral carotid arteries (yellow arrow) arising from the aortic arch who is called a truncus bicaroticus associated with arteria lusoria (green arrow) / left subclavian artery (red arrow).

The patient was taken care of and put on antibiotic treatment. The fever disappeared within the first 48 hours and the biological assessment normalized.

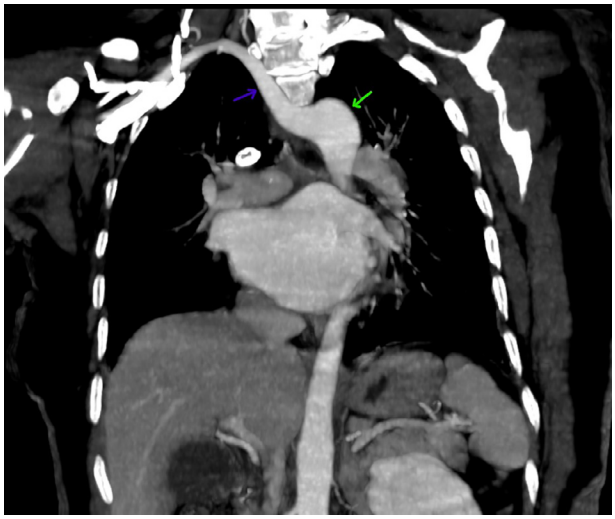

Fig. 4 – Postcontrast computed tomography—angiography coronal image demonstrates the presence of an Arteria lusoria (aberrant right subclavian artery) (blue arrow) which originates from the aortic arch (green arrow).

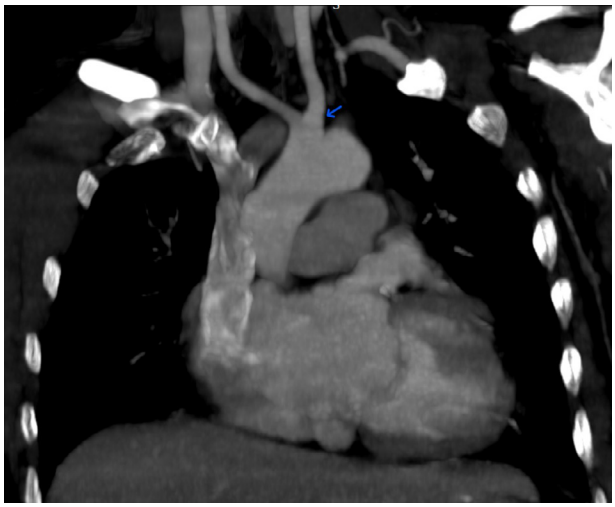

Fig. 5 – Postcontrast computed tomography—angiography coronal image shows a common origin of bilateral carotid arteries who is called a truncus bicaroticus (blue arrow).

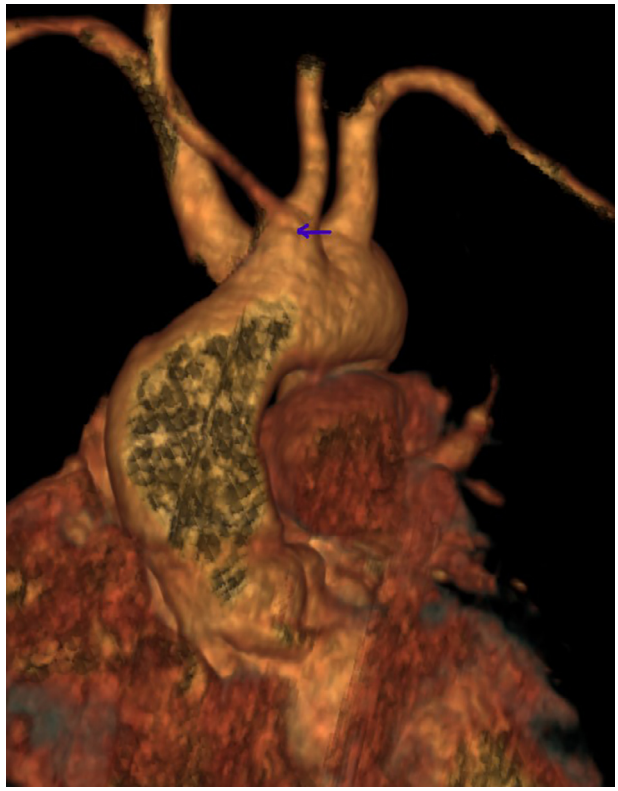

Fig. 6 – Anterior view of a CT angiogram with 3D reconstruction shows a common origin of bilateral carotid arteries (arising from the aortic arch who is called a truncus bicaroticus (blue arrow) associated with Arteria lusoria.

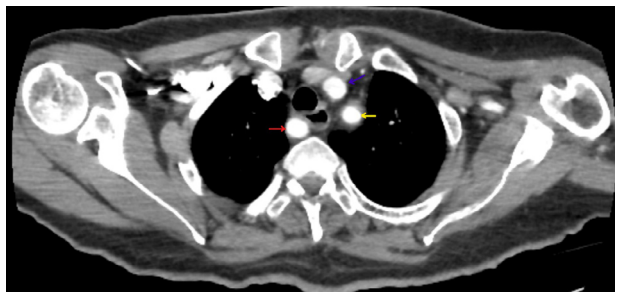

Fig. 7 – Postcontrast computed tomography—angiography axial image showing the arterial branching above the aortic arch: Truncus bicaroticus (blue arrow), left subclavian artery (yellow arrow), and Arteria lusoria (red arrow).

Discussion

Arteria lusoria (aberrant right subclavian artery) is the most common congenital aortic arch anomaly with a prevalence of 0.4%-2% [3]. This vascular anomaly was initially described, to our knowledge, in 1735 by Hunauld [4]. And it was in 1794 that Bayford described the clinical signs of this vascular anomaly under the term dysphagia lusoria [5], it occurs as a result of abnormal embryological involution of the right fourth aortic arch and the right proximal dorsal aorta and is commonly associated with other congenital anomalies of the heart and great vessels resulting from embryologic malformation of the aortic arch, including Truncus bicaroticus, which is a common trunk of bilateral common carotid arteries [6].The association of Arteria lusoria (ARSA) and Truncus bicaroticus is rare [7].

Clinically, Arteria lusoria is often asymptomatic, since the latter does not form a complete ring around the esophagus or the trachea, it is discovered in the majority of cases accidentally during evaluation of other mediastinal pathologies, when symptomatic, it causes dysphagia lusoria from esophageal compression, or dyspnea and chronic coughing from tracheal compression. Truncus bicaroticus is a precon-

dition for tracheal-esophageal compression [7–9], there are other much rarer symptoms indicating the presence of an aneurysmal dilation of the proximal lusorian artery which is one of the most dangerous complications [6,10].

MDCTA (multidetector row computed tomography angiography) and conventional angiography, including direct catheterization of the Arteria lusoria (aberrant right subclavian artery), confirm the diagnosis [3].

Magnetic resonance angiography is a noninvasive imaging modality used in the evaluation of thoracic aortic malformation including Arteria lusoria and Truncus bicaroticus [11].

No treatment is indicated for asymptomatic Arteria lusoria. Treatment is indicated in symptomatic cases as well as for the prevention of complications due to aneurysmal dilation of the lusorian artery.

There are many treatment options for Arteria lusoria. Surgical, endovascular or combined interventions can be used, most patient are asymptomatic and rarely need a treatment [12]. Such was the case of our patient.

Conclusion

Arteria lusoria is a rare, often asymptomatic vascular malformation discovered incidentally. Its diagnosis should lead the radiologist to look for abnormalities of the heart and large vessels. The association with a Truncus bicaroticus is one of the rarest aortic arch anomalies.

Authors' contribution

All the authors contributed to the conduct of this research work. The authors have read and approved the final version of the manuscript.

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