

## Dissecting Aneurysm of the Aorta with Anevryma of Arteria Lusoria. A Case Report in Niger

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### ABSTRACT

**Introduction:** An aortic aneurysm is an increase in the caliber of the aorta greater than or equal to 50% of its normal caliber. Complications associated with these aneurysms are dissection and thrombosis. The supra-aortic trunks are collaterals of the aorta which arise from its segment II, intended for the arterial vascularization of the head, neck and upper limbs. Sometimes there can be modifications in the birth of these vessels, we speak of anatomical variants, one variant of which was involved in this study: it is the arteria lusoria. The authors report their experience with a dissecting aortic aneurysm with parietal thrombosis in a subject with arteria lusoria.

**Patient and Observation:** This is a subject aged 68 at the time of diagnosis, male, known to be hypertensive for 10 years with poor follow-up. He was referred to the radiology and medical imaging department for assessment of chest pain with dyspnea and dysphagia. Faced with this clinical picture, a frontal chest X-ray then a thoracoabdominopelvic CT scan were requested. The diagnosis that was retained at the end of the analysis of the CT scan was: An aneurysmal development of the aorta; a Stanford type B aortic dissection; an Arteria Lusoria (discovered incidentally) with an aneurysm (complication of aortic aneurysm); parietal arterial thrombosis. The patient was admitted to the cardiovascular surgery department for further treatment.

**Conclusion:** Dissecting aortic aneurysm, although rare, makes a logical association. However, the extension of the aneurysm to a branch of the supra-aortic trunks represents the primary interest of the case presented. Finally, the fact that this branch of the supra-aortic trunks is an Arteria Lusoria makes this case extremely rare and constitutes the second interest of the case presented both clinically and diagnostically.

### Keywords

Aneurysm, Dissection, Aorta, Arteria Lusoria, CT scan, Niger.

### Introduction

An aortic aneurysm is an increase in the caliber of the aorta greater than or equal to 50% of its normal caliber. Complications associated with these aneurysms are dissection and thrombosis. The aneurysm, in addition to being located on the aorta, can extend to the collaterals of the aorta such as the supra-aortic trunks [1]. The supra-aortic trunks are collaterals of the aorta which arise from its segment II, intended for the arterial vascularization of the

head, neck and upper limbs. They are classically three in number: the right brachiocephalic arterial trunk, the left common carotid and the left subclavian. Sometimes there can be modifications in the birth of these vessels, we speak of anatomical variants, one of which was involved in this study: it is the arteria lusoria [2,3].

The authors report their experience with a dissecting aortic aneurysm with parietal thrombosis in a subject with arteria lusoria.

### Patient and Observation

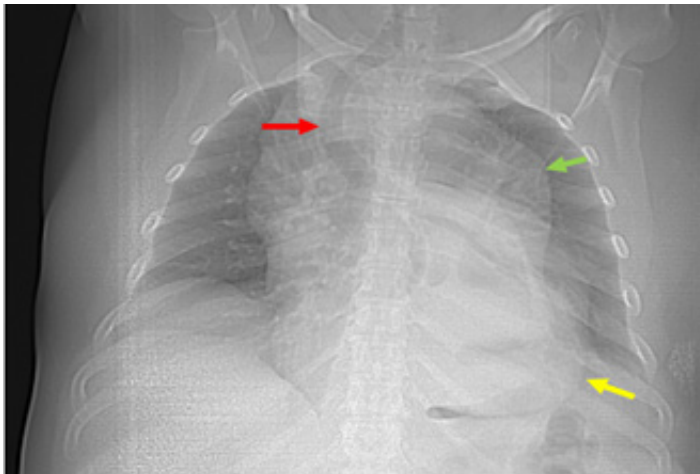
This is a subject aged 68 at the time of diagnosis, male, known to

be hypertensive for 10 years with poor follow-up. He was referred to the radiology and medical imaging department for assessment of chest pain with dyspnea and dysphagia.

The clinical examination found:

- Blood pressure measured was 180/120 mmHg in the left arm and 220/130 mmHg in the right arm.
- At the level of the thorax: normal symmetry of the thorax, vocal vibrations were well transmitted, the sound of the thorax was normal, the gallbladder murmur was well perceived.
- The abdomen was supple with an epigastric mass, not very painful on palpation, throbbing and pulsating. The mass was elongated along the midline.
- The rest of the clinical examination was normal.

Faced with this clinical picture, a full-frontal chest x-ray was requested (figure 1). Analysis of the radiographic image found an increase in the cardiac silhouette with a cardiothoracic index calculated at 0.54. There was enlargement of the middle and upper mediastinum. There was also a right lateral deviation of the trachea.



**Figure 1:** Frontal chest x-ray. We note cardiomegaly (yellow arrow), widening of the middle and upper mediastinum (green arrow), right lateral deviation of the trachea (red arrow).

Given these radiographic results, additional CT examination was indicated. A thoraco-abdomino-pelvic CT examination (figure 2,3) was performed without and with injection of contrast product with 3 mm cuts. The analysis of the images made it possible to find:

#### - At thoracic level

The thoracic aorta was unrolled and enlarged. The maximum diameter was measured at 85.4 mm. An abnormality in the contrast enhancement of the aortic lumen was also found after injection of the iodinated contrast product. Two zones of different density were found separated by a hypodense line. A hypodense thickening of the wall of the non-enhanced aorta was found after injection of the contrast product, the maximum thickness of which was measured at 55.8 mm. The supra-aortic trunks had a particular configuration. The right subclavian artery was the last to arise from the arch of the aorta and passed behind the trachea and the esophagus before joining the right supraclavicular region. This artery was also increased in caliber (its diameter was measured at 24.5 mm). In front of the aberrant right supraclavicular artery, the left subclavian artery was found, then still in front, the common carotid arteries, which arose through a common trunk (bi-carotid).

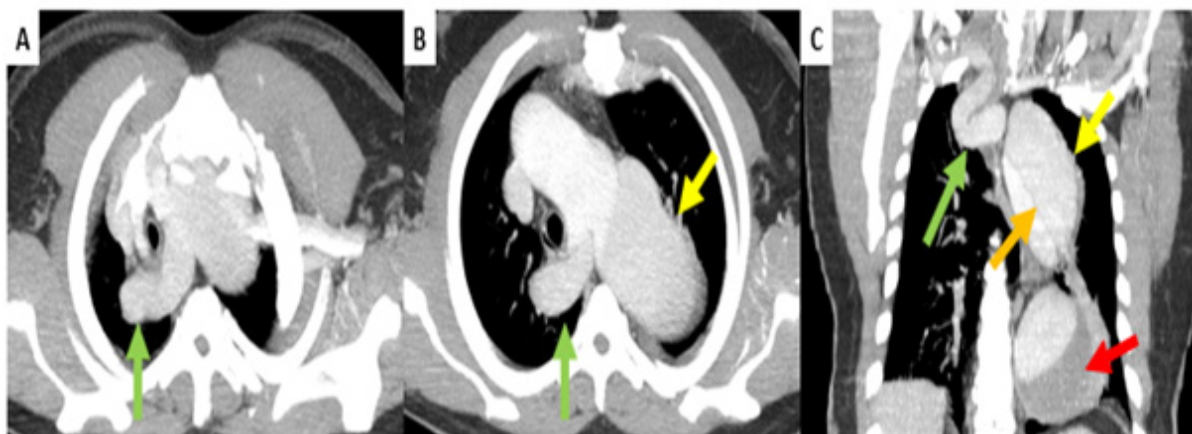
#### - At the level of the abdomen

It was found on the abdominal aorta the extension of the lesions described at the level of the thoracic aorta, namely the unfolding, the increase in caliber and the hypodense parietal thickening.

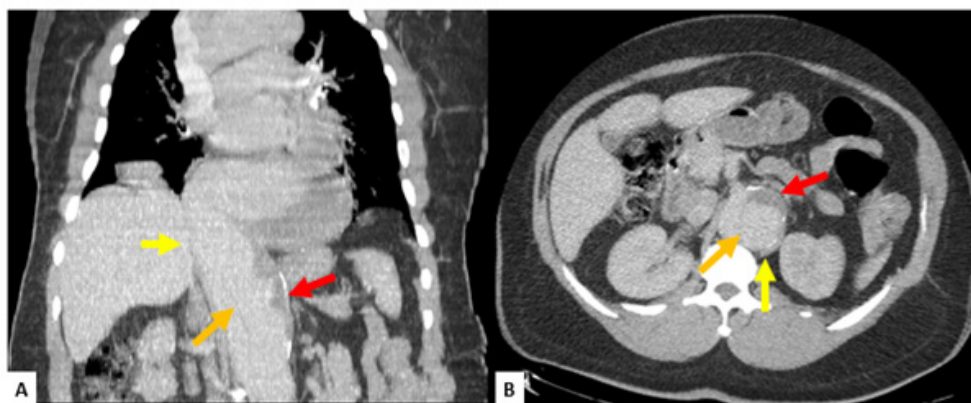
The diagnosis that was retained at the end of the analysis of the CT scan was:

- Aneurysmal development of the aorta
- A Stanford type B aortic dissection
- An Arteria Lusoria (discovered incidentally) with an aneurysm (complication of aortic aneurysm)
- Parietal arterial thrombosis.

The patient is admitted to the cardiovascular surgery department for further treatment.



**Figure 2:** CT of the thorax in mediastinal window and MIP reconstruction. “A and B” axial sections; “C” coronal section. We note an aneurysm of the thoracic aorta (yellow arrow), a dissection of the aorta (orange arrow), a thrombosis of the aortic wall (red arrow), an arteria lusoria whose caliber is increased (green arrow).



**Figure 3:** CT of the thoraco-abdomen in mediastinal window and MIP reconstruction. “A” coronal section and “B” axial section. There is an aneurysm of the abdominal aorta (yellow arrow), dissection of the aorta (orange arrow), thrombosis of the aortic wall (red arrow).

## Discussion

Aortic aneurysm is a relatively rare condition, found in elderly males [1]. It can be located on all or a segment of the aorta [4]. Complications can occur including dissection of the aorta which is a cleavage of the intima of the aorta. The origin of the cleavage of the intima and called gateway. This results in two channels in which blood will circulate. The real channel which is permeable and the false non-permeable channel which will create a dead end through which the dissection will extend. Several classifications are used including that of De Bakey, that of Roux and Guilmet, or that of Stanford [5-7]. Both aneurysm and dissection are lesions that can extend along the axis of the aorta but they can also extend to the aortic collaterals. This is how the case studied presents an extension of the aneurysm on a branch of the supra-aortic trunks. The particularity of this case is that this branch is an aberrant artery: it is the arteria lusoria. This is the right subclavian artery whose origin is behind that of the left subclavian artery on the arch of the aorta. Thus, to reach the right subclavian region it must cross the midline at the level of the C3 vertebral body and most often behind the esophagus, sometimes between the esophagus and the trachea and more rarely in front of the trachea. The relationship between this aberrant artery and the esophagus and trachea explains the accompanying symptoms, notably dysphagia and dyspnea [8,9]. This explains the symptomatology of the case studied due to the presence of the aneurysm on the arteria lusoria which represses and compresses the esophagus and the trachea.

In cases of arteria lusoria, the chest x-ray is most often normal. In this case, the aortic aneurysm associated with the arteria lusoria aneurysm explains the radiographic signs found [10]. Chest CT with intravenous injection of iodinated contrast product was intended to make the diagnosis by taking stock of all the lesions.

## Conclusion

Dissecting aortic aneurysm, although rare, makes a logical association. However, the extension of the aneurysm to a branch of the supra-aortic trunks represents the primary interest of the

case presented. Finally, the fact that this branch of the supra-aortic trunks is an Arteria Lusoria makes this case extremely rare and constitutes the second interest of the case presented both clinically and diagnostically.

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