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Takayasu Arteritis Associated with Tuberculosis in the Pediatric Population: A Case Report

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Abstract **Case Report**

Takayasu disease is a rare chronic vasculitis affecting large and medium-caliber arteries, particularly the aorta and its main branches. Rare cases have been reported in the pediatric population, particularly in the initial phase of disease activity. Association with tuberculosis was described. We report a case of a 15-year-old girl, showing active Takayasu disease associated with hypertension in the context of pulmonary tuberculosis. Thoracoabdominal CT angiography revealed involvement of the thoracoabdominal aorta with signs of activity and sub occlusive stenosis of the ostium of the left renal artery, explaining the renovascular hypertension.

Keywords: Takayasu arteritis, tuberculosis, pediatric population, computed tomography angiography.

INTRODUCTION

Takayasu's arteritis is a rare vasculitis characterized by chronic granulomatous inflammation of the arterial wall leading to thickening, stenosis, occlusion and sometimes aneurysm.

Clinical manifestations depend on the disease's phase.

In childhood, renal arteries and abdominal aorta are most likely involved. Clinical manifestations are dominated by renovascular hypertension, intermittent claudication of the lower limbs, abolition of peripheral pulses [1].

Computed Tomography Angiography (CTA) is an excellent imaging modality, not only in confirming the diagnosis, but also in monitoring the progression of the disease, particularly post-treatment, and detecting complications [2].

CASE PRESENTATION

This is the case of a 15-year-old girl, with a history of pulmonary tuberculosis 2 months ago, who presented recent arterial hypertension. Clinical examination revealed an abdominal murmur and unperceived femoral pulses, there were no other clinical manifestations. A CTA was ordered, revealing circumferential, regular thickening of the lower thoracic and abdominal aorta **(Fig. 1)**, as well as the involvement of celiac trunk, superior mesenteric artery and renal arteries. Pulmonary arteries were not affected.

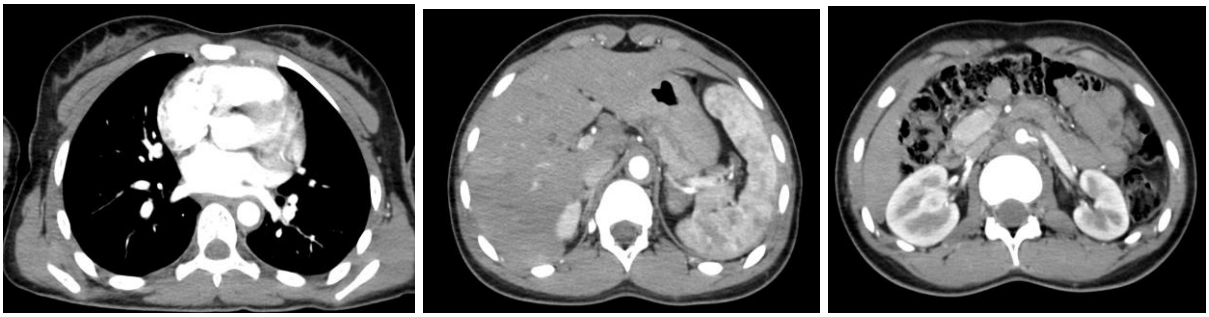
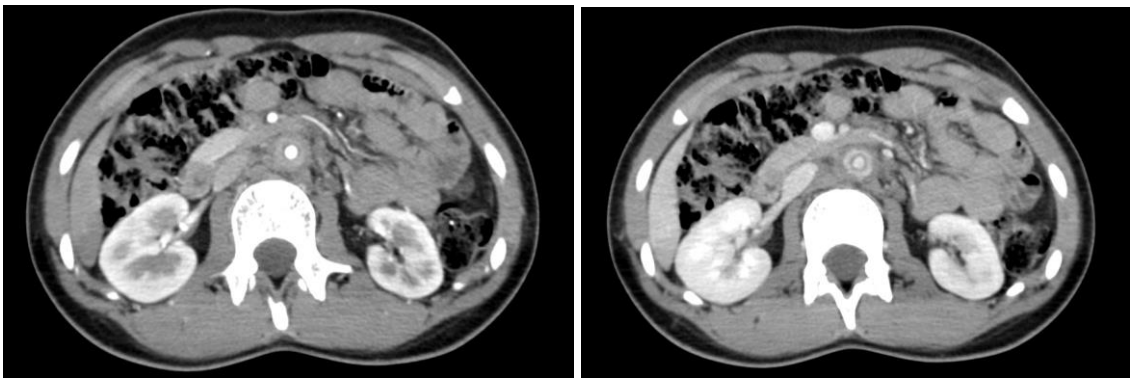


Figure 1: CT angiography in axial section showing thickening of the wall of the thoracoabdominal aorta, sub-stenosing thickening of the ostium and proximal portion of the left renal artery

In the lower abdomen, at the level of L2, the abdominal aorta shows regular circumferential parietal thickening, sub-stenosing with homogeneous enhancement of the arterial wall in late phase, producing the typical "double-ring" or "target sign" in relation with active inflammation **(Fig. 2)**.



ARTERIAL PHASE **LATE PHASE**

Figure 2: Circumferential, regular, sub-stenosing parietal thickening of the abdominal aorta at L2 level, at arterial and late phase, with a target-like sign at late phase testifying of the active nature of the disease.

There was also an abrupt transition from pathological abdominal aorta to normal aorta, which is highly characteristic of Takayasu's arteritis **(Fig. 3).**

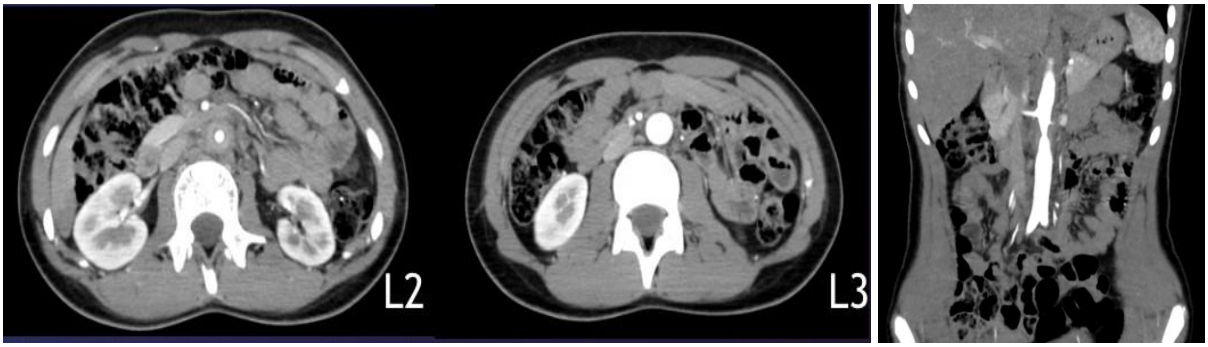


Figure 3: Figure showing abrupt transition from pathological aorta at L2 to healthy aorta at L3

In view of the clinical context and CTA findings, diagnosis of Takayasu's arteritis was performed.

DISCUSSION

Takayasu disease is a vasculitis of young women, but can also occur in childhood. It is the third most common cause of vasculitis in the pediatric population.

Although its incidence has yet to be accurately determined in the pediatric population, given the wide variability of its clinical presentation and the non-specificity of its symptoms, especially in the initial phase of the disease, its diagnosis is difficult or delayed.

Frequent association between tuberculosis, particularly pulmonary tuberculosis, and Takayasu disease. Some studies point to a histological similarity, while others suggest that Mycobacterium tuberculosis proliferates in the aortic wall in order to evade the immune system [3].

Our patient met the criteria set out in the 2022 American College of Rheumatology/EULAR classification criteria for Takayasu arteritis (EULAR 2022) [4].

CTA is an excellent imaging modality to assess Takayasu's arteritis. It allows early diagnosis, by demonstrating circumferential and regular arterial thickening in the initial phase of the disease, assessing its extent and complications, in order to initiate early treatment and improve the prognosis of the pathology [2].

MRI angiography has the advantage of being less irradiating and has become a modality of imaging for the diagnosis of Takayasu arteritis particularly in children, providing detailed vascular information, including topography and mapping of arterial lesions, showing stenosing, occlusive and ectatic lesions at a later stage [5].

Ultrasound is more effective for assessing lesions of large, superficial vessels such as the carotid arteries or vessels of the upper and lower limbs [6].

CONCLUSION

Takayasu arteritis is a rare disease requiring heightened clinical vigilance, especially in the pediatric population. CTA is essential for early diagnosis, accurate assessment of the extent of lesions and appropriate follow-up, thus improving the prognosis of these patients. Actually MRI

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