

Intermittent Claudication of the Young Adult Revealing Coarctation of the Aorta

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Abstract

Coarctation of the aorta is a congenital heart disease most often discovered in the neonatal period but can be diagnosed later in older children or even in adults. High blood pressure is the main manifestation in adulthood. Authors reported the case of a 21-year-old patient referred for intermittent claudication associated with grade III high blood pressure in whom the examination showed a blood pressure asymmetry with a gradient of 65mmHg between the upper and lower limbs. Cardiac ultrasound showed bicuspid aortic valve associated with flow acceleration at the aortic isthmus with diastolic extension. Thoracic angioscan confirmed the coarctation of the aorta.

Keywords: High blood pressure; Young adult; Coarctation of the aorta; Dilatation; Stent.

Introduction

Coarctation of the aorta is a congenital heart disease characterized by a localized narrowing of the aorta most often located at the isthmus. It represents 5 to 8% of congenital heart defects [1,2].

It is most often diagnosed during the neonatal period, following closure of the ductus arteriosus, however there are rare cases of coarctation of the aorta discovered during adulthood. The authors reported the case of a

21-year-old adult with grade III systolo-diastolic hypertension that revealed a coarctation of the aorta.

Observation

This is a 21-year-old man without notion of consanguinity who presented with intermittent claudication of the lower limbs with a walking perimeter evaluated at 150m and intense frontal headaches of intermittent with morning exacerbation. On examination, there was a blood pressure asymmetry

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between the upper and lower limbs (185/110mmHg and 120/70mmHg respectively). The presence of a diastolic murmur at the level of Erb's point of intensity 2/6e grade and a systolic murmur of intensity 3/6e grade at the right paravertebral level (3rd and 4th posterior intercostal space). Pulse asymmetry between the upper limbs, which were well perceived, and the lower limbs, which were poorly perceived. The electrocardiogram showed a left ventricular hypertrophy. Transthoracic echocardiography showed bicuspid aortic valve, moderate aortic insufficiency, preservation of left ventricular systolic function, and a coarctation of the aorta with a maximum velocity of 3.9m/s and a diastolic extension in the descending thoracic aorta

(downstream of the isthmus) (Figure 1). The thoracic angioscanner had demonstrated a coarctation of the post ductal aorta with a diaphragm stenosis (Figure 2) and a large collateral circulation associated with hypertrophy of the paravertebral and mammary arteries. The patient was put on antihypertensive treatment and angioplasty with placement of a stent at the level of the stenotic zone was indicated. The patient underwent angioplasty with stent placement in the stenotic zone abroad. After one year of follow-up, the patient's blood pressure was normalized, the pulses in the lower limbs were well perceived and there was no blood pressure gradient (Figure 3). An ambulatory blood pressure monitoring and a stress test were requested.

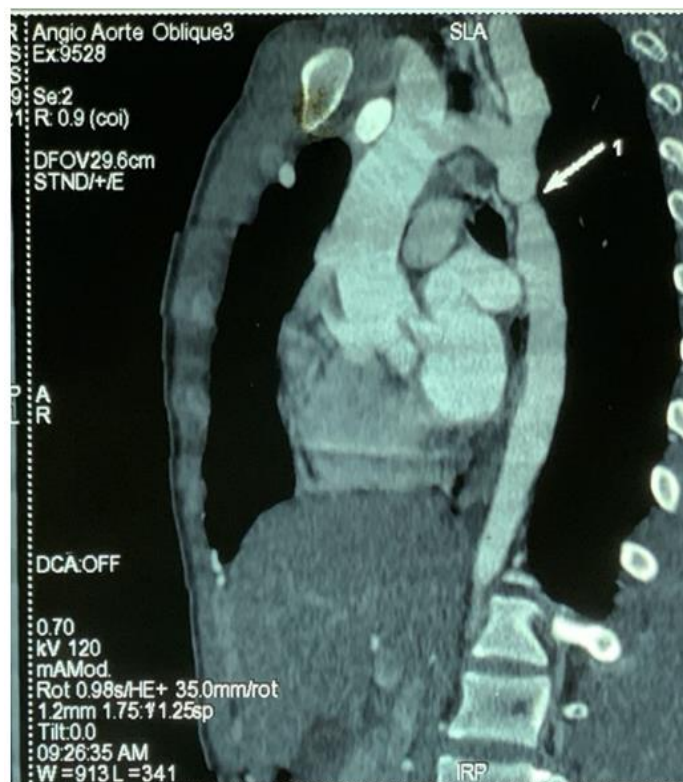


Figure 1: Thoracic angioscan: Diaphragm stenosis downstream of the left subclavian artery.

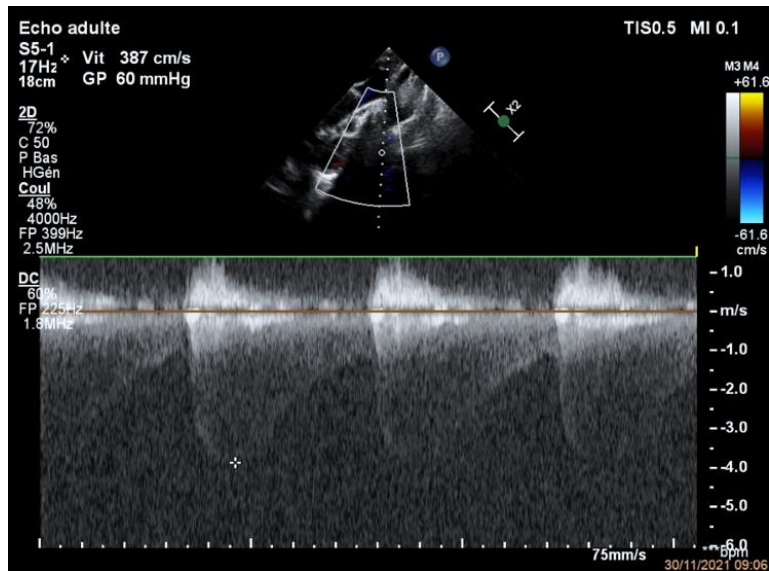


Figure 2: Cardiac ultrasound, suprasternal section with continuous Doppler: systolic isthmic gradient with diastolic extension.

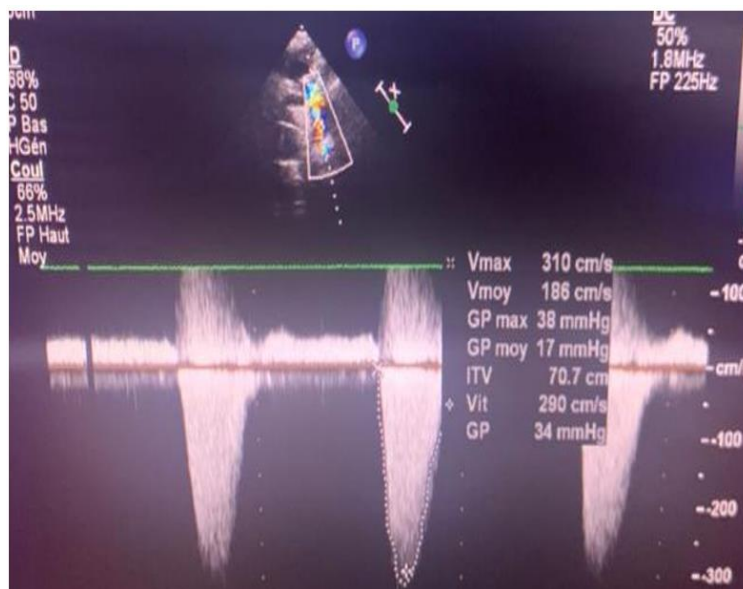


Figure 3: Cardiac ultrasound suprasternal section with continuous Doppler post stent: no diastolic extension.

Discussion

Coarctation of the aorta accounts for 5-8% of all congenital heart disease [1]. For unknown reasons, this pathology seems to affect more boys than girls (male/female ratio:3/2) [3]. It

leads to a more or less important interruption of blood flow in the lower part of the body. There is hypertension in the upper limbs and cephalic region contrasting with hypotension in the lower limbs. It is responsible for a hemodynamically significant gradient

between the upper and lower limbs when it exceeds at least 20mmHg. The high blood pressure and decreased lower limb pulses are clinical guidelines for the diagnosis [4,5]. A maximal systolic ejection murmur in the left interscapular region is suggestive of coarctation of the isthmus of the aorta [6]. This clinical presentation was found in our patient. A murmur perceived in the dorsal region may be due to collaterals. The most common associated anomaly is bicuspid aortic valve, which can be found in 50-85% of cases (but only 7% of bicuspid aortic valve have a concomitant coarctation). Hypoplasia of the aortic arch may be found in 30% of cases. It will be necessary to look for an interventricular communication or a mitral valve anomaly (mitral stenosis, parachute mitral valve, etc). Cerebral aneurysms are present in 2.5-10% of untreated adults ("berry aneurysms") [6,7]. In case of coarctation of the aorta, ultrasound gives us information on the anatomy but also on the hemodynamic situation, hence the importance of the supra-sternal section when performing cardiac ultrasound in any patient. The diagnosis of coarctation of the aorta is based on thoracic angiography, which provides, in addition to

the positive diagnosis, details on the location of the stenosis, its diameter, the length of the narrowed segment, the diameter of the upstream and downstream aortic segment, and the collaterality. In adults with native coarctation and favorable anatomy, angioplasty with stenting has become the first-line treatment. However, the long-term survival rate of patients treated in adulthood is lower than in the normal population [8,9]. This is related to earlier coronary artery disease and complications of hypertension. Coarctation of the aorta is not simply an anatomical malformation, but also leads to structural changes in the entire aorta. This could explain the complications of coarctation, even after correction.

Conclusion

High blood pressure is the main clinical manifestation of coarctation of the aorta in adults. However, not all intermittent claudication is due to lower limb arteriopathy. In adults, angioplasty with stenting remains the treatment of choice. Coarctation of the aorta is a diffuse systemic arterial pathology that requires regular follow-up for life.

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