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Nassour Aware Brahim *

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Case Report

Coarctation of the Aorta Discovered Incidentally During Pregnancy

Nassour Aware Brahim *, Fadoul Adam, Noel Mahoungou, Maria Khalil, Salim Arouss, Ghali Bennouna, Abdel Nasser Drighil, Leila Azzouzi, and Rachida Habbal

Cardiology Chu Ibn Rochd Casablanca

***Corresponding Author:** Nassour Aware Brahim, Cardiology Chu Ibn Rochd Casablanca

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Abstract

Background

Coarctation of the aorta is a narrowing of the aorta most commonly found just distal to the origin of the left subclavian artery. This malformation is mostly discovered in the birth by the systematic palpation of the femoral pulses, but can be later diagnosed at the big child's even at the adult.

Casa Presensation:

We report here the case of a 32-year-old young man, who is treated for hypertension since two years and to whom a thoracic scanner realized for the assessment of a chronic cough revealed an aortic coarctation.

Conclusions

This observation reminds us that resistant hypertension in young adults justifies the search for a curable cause. Concerning the association between pregnancy and aortic coarctation, the literature, less alarming than twenty years ago, encourages a wait-and-see and "armed" attitude by favouring a natural delivery.

Keywords: coarctation of the aorta; adult; hypertension

Introduction

Coarctation of the aorta is a narrowing of the aorta most commonly found just distal to the origin of the left subclavian artery. This malformation is mostly discovered in the birth by the systematic palpation of the femoral pulses, but can be later diagnosed at the big child's even at the adult.

Case Presentation

We report a case of coarctation of the aorta discovered incidentally in a 32-year-old pregnant patient with newly discovered hypertension. An etiological work-up in search of a curable cause was negative a few years ago. A cardiological opinion is motivated by the observation of an unbalanced hypertension, in spite of a dual therapy associating clonidine and propranolol, in this patient at 37 and a half weeks of amenorrhea. This asymptomatic hypertension, without clinical signs of pre-eclampsia, was associated with intrauterine growth retardation detected in the third trimester of pregnancy Cardiac auscultation revealed an intense systolic murmur, medio-thoracic, radiating to the supra-clavicular recesses and the back. The femoral pulses are perceived, their amplitude is weak Blood pressure asymmetry is noted: 220/70 mmHg in the right arm, 150/70 mmHg in the left arm, and the systolic blood pressure of the lower limbs, measured with a continuous doppler, does not exceed 110 mmHg. The ECG is unremarkable: among other things, there is no left ventricular hypertrophy. The echocardiography identified a moderately dilated left ventricle (LVd at 62 mm), not very hypertrophic with a preserved systolic function (EF at 69%), a minimal mitral insufficiency without aortic valve disease with a good focus of the ventricular.

The aortic arch is not identifiable supra-sternally, but blind continuous Doppler with the Pedoff probe shows a presumed transisthmic gradient calculated at 74 mmHg (Figure 1). Two diagnoses were then evoked: coarctation or hypoplasia of the aortic arch. A caesarean delivery was decided upon at 38 weeks, resulting in the birth of a 2250 g baby girl with an APGAR score of 10. Subsequently, the work-up was completed by magnetic resonance angiography (Figure 2, p. 19) which confirmed the existence of an extremely tight, almost completely occlusive aortic coarctation of the isthmic aorta immediately downstream of the start of the left subclavian. There is also a highly developed network of collaterals (intercostal, bronchial and parietal).

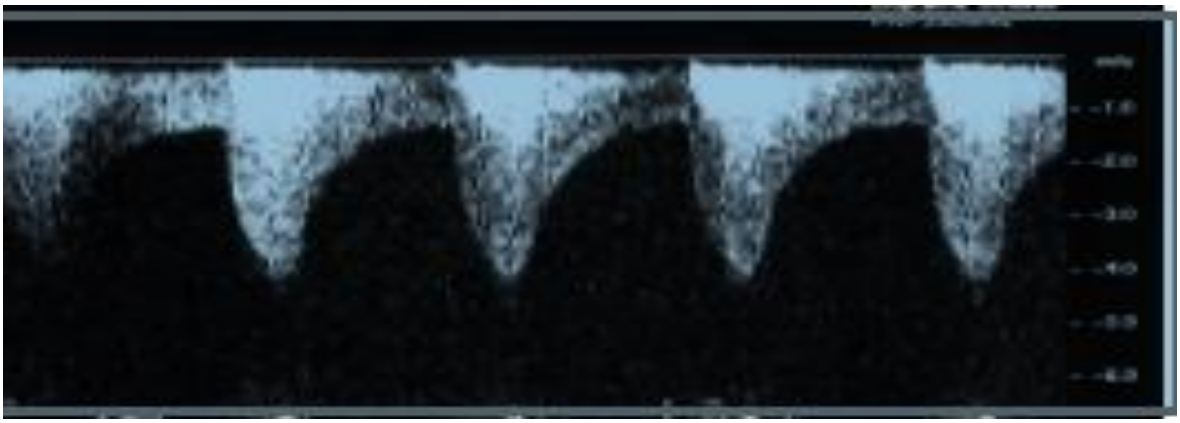

Figure 1: Continuous supra-sternal flow Doppler flow: maximum pressure gradient estimated at 74 mmHg

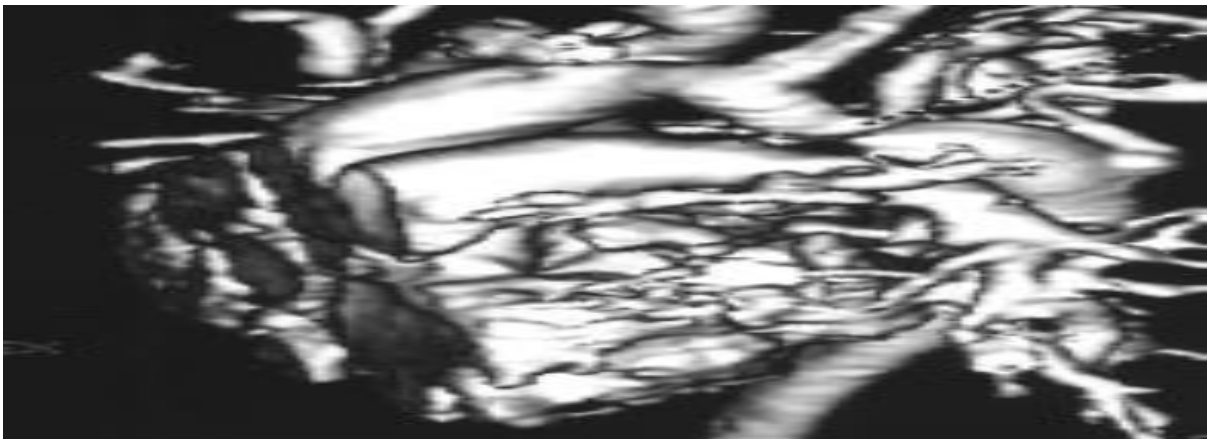

Figure 2: Extremely tight coarctation of the isthmic aorta immediately downstream of the origin of the left subclavian. Highly developed collateral network

A surgical operation with placement of an aortaortic tube was performed two months after delivery, with simple postoperative care and normalization of blood pressure values in the absence of any drug treatment.

Discussion

Early diagnosis and surgical treatment have considerably reduced the frequency of coarctation in young adults; this diagnosis is currently made exceptionally in pregnant and hypertensive women, especially in patients with difficult-to-control hypertension and asymmetric blood pressure. The discovery of an aortic coarctation is classically associated with a high maternal mortality (3 to 10% depending on the authors), with a risk of aortic rupture or dissection, but also of polygon of Willis aneurysm rupture, heart failure and, more rarely, infective endocarditis [1, 2, 3]. The higher the blood pressure, the more frequent these complications are [1, 2]. The predisposition to dissection is due to biochemical changes in the connective tissue secondary to elevated estrogen levels or cystic medianecrosis [2, 4]. Increased blood volume and cardiac output, especially in the last trimester, also increase the risk of aortic rupture [2]. Heart failure and pulmonary oedema classically appear in the 4th-5th month of pregnancy, but are even more frequent and severe in the later months [1]. Their occurrence in the first trimester worsens the prognosis. Bacterial grafting may occur after delivery, especiallyif aortic disease or mitral insufficiency is associated [1]. For these reasons, in the 1960s most authors proposed contraception, sterilisation, caesarean section or therapeutic abortion [1, 5]. Later, others proposed surgical cure during pregnancy [2]. Currently, it is considered that management should be individualised and depends on multiple parameters: severity of the coarctation, left ventricular function, possible associated cardiac defects and obstetrical history. The latest cases described in the literature show a better tolerance and fewer complications than twenty years ago. However, maternal mortality is still estimated at 3% [2]. The incidence of pre-eclampsia appears to be similar to that of the general population [6] and coarctation does not predispose to intrauterine growth retardation [7]. The behaviour of hypertension in pregnancy is similar to that of essential hypertension, with a marked decrease in blood pressure values in the first two trimesters and a re-escalation in the third [7]. Natural delivery with the use of forceps to reduce labour time, continuous monitoring of upper and lower limb blood pressure, and careful monitoring of vascular filling is currently recommended [8]. Systemic analgesia with morphine analogues, combined with a paracervical nerve block, is also recommended. Epidural anaesthesia should be avoided, as the decrease in systemic resistance may decrease uterine flow. Repair of coarctation during pregnancy is not considered necessary or rational in the absence of haemodynamic decompensation [5]. CEC in pregnancy is associated with a maternal mortality of 2-3% and a fetal mortality of 20-30%. fetal mortality of 20-30%. Procedures performed in the second and third trimester are associated with better fetal survival. An increase in congenital malformations during CEC in the first trimester of pregnancy has been documented [9]. Balloon angioplasty should be avoided in pregnant women because of the fragility of the aortic walls. To our knowledge, there are no cases described in the literature. The incidence of cardiac malformations is 3 to 5% in offspring; a systematic echocardiography of the child is therefore logical. The reference examination for coarctation in pregnant women is MRI [10].

Conclusions

This observation reminds us that resistant hypertension in young adults justifies the search for a curable cause. Concerning the association between pregnancy and aortic coarctation, the literature, less alarming than twenty years ago, encourages a wait-and-see and "armed" attitude by favouring a natural delivery

Declarations

Ethics approval and consent to participate:

It is non applicable

Consent For Publication

In accordance with international and academic standards, written consent for publication was obtained from the patient and retained by the authors

Conflicts of Interest

The authors declared no conflicts of interest

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Authors Informations: Cardiology department in CHU IBN ROCH OF CASABLANCA TO MORROCO and HOSPITAL SENS TO FRANCE

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