ISSN No:-2456-2165

Coarctation of the Aorta Discovered During Pregnancy

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Abstract:- Coarctation of the aorta is a rare cause of severe hypertension in pregnancy, often discovered in childhood and exceptionally in pregnant women with hypertension. It is suspected in the presence of a clinical picture of asymmetric blood pressure, confirmed by Angio scan. Arterial hypertension is responsible for complications such as aortic dissection and aneurysm rupture, with a poor prognosis. Treatment is based on endovascular and surgical methods, the choice of which depends on the terrain, and above all on drug-based control of blood pressure. Prognosis depends on early management. Our patient progressed well with symptomatic treatment during pregnancy and underwent vascular prosthesis surgery 1-year post-partum, with good progression and a 3-year follow-up.

Keywords:- *Coarctation of the Aorta, Pregnancy, Surgical Treatment.*

I. INTRODUCTION

Coarctation of the thoracic aorta occurs in approximately 6% to 8% of patients with congenital heart disease (1). Although there some anatomical variation, coarctation usually is characterized by a discrete narrowing of the aorta distal to the subclavian artery. The diagnosis is made during infancy or childhood in 80% of patients, and survival into adulthood is common (2).it is an important abnormality which requires operation in many cases. If left untreated, it can be fatal, and is only exceptionally diagnosed in pregnant and hypertensive women (3).

We report a case of coarctation of the aorta diagnosed during pregnancy.

II. MEDICAL OBSERVATION

We report the case of a 23-year-old patient, pregnant at 37 SA, primigravida primiparous, with no pathological history. She was admitted to the emergency department for gestational hypertension. Examination on admission revealed a conscious patient in good general condition with BP of 19/10 mmHg in the left arm and 12/07 mmHg in the right arm; heart rate of 80 beats/minute; respiratory rate of 18 cycles/minute with no neurological signs of severity. Obstetrical examination revealed a patient in non-labor with a relaxed uterus with no bleeding and a fetal heart rate of 140 beats/minute. Cardiac auscultation revealed a systolic murmur. Femoral pulses were perceived as weak. The ECG showed a regular sinus rhythm with no depolarization disorder. Echocardiography showed hypertensive cardiopathy, with a non-dilated, slightly hypertrophic left ventricle with a preserved systolic function (ejection fraction 55%), a zone of turbulence downstream of the left subclavian artery with zone of narrowing, grade 1 mitral and tricuspid insufficiency without aortic or mitral valve stenosis. The diagnosis of coarctation of the aorta was suspected in the face of this clinical picture and confirmed by Angio scan (figure 1), which showed a very tight short stenosis of the isthmic aorta located 9mm downstream of the birth of the left subclavian artery with a developed bypass.

Circulation and persistence of a residual millimetric lumen measured at 3.7mm in diameter over a maximum height of 5mm. The patient was hospitalized for one week and then underwent a scheduled caesarean section under general anesthesia without incident, giving birth to a male neonate, Apgar=10/10, PDN=3500g. The postoperative course was straightforward, and the patient was discharged on postpartum day 6. She was operated on 1 year later with a vascular prosthesis with good evolution for a 3-year follow-up.

ISSN No:-2456-2165

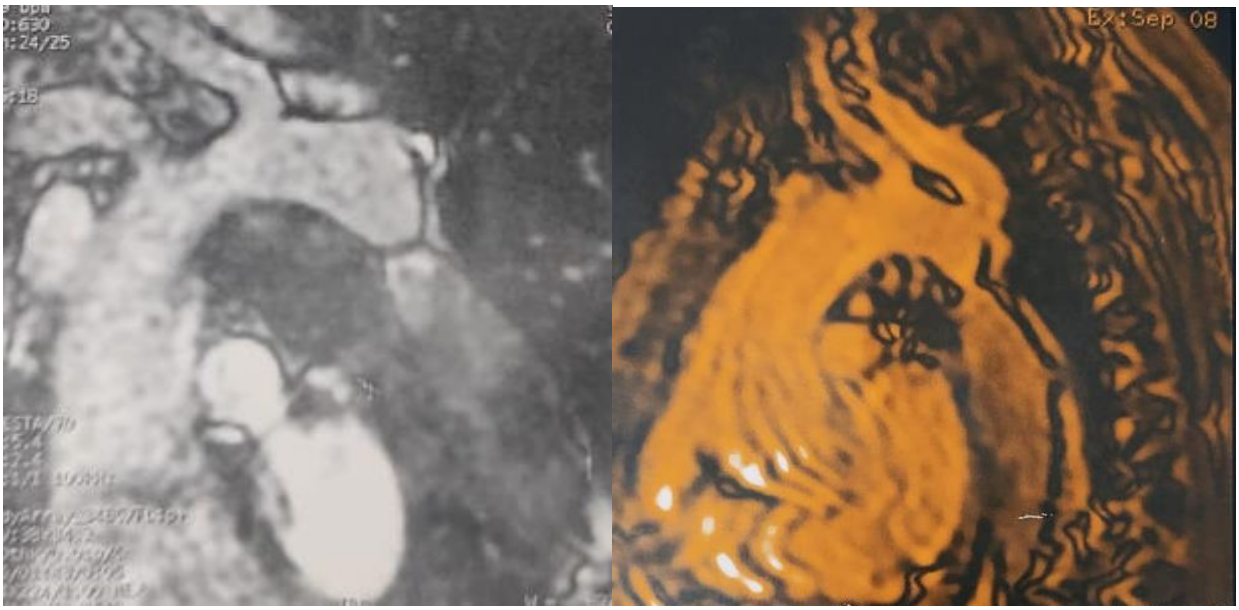

Fig 1: Angio scan of the aorta showing the isthmic location of the coarctation.

III. DISCUSSION

Several issues are of concern in the care of a woman with coarctation of the aorta who becomes pregnant. Possible changes in the aortic wall during the gravid state, coarctation-associated aortopathy, and long-standing hypertension combine to increase the risk of aortic rupture or dissection (4).

Maternal complications include also aortic cerebral infarction, hypertensive crisis, congestive heart failure and infective endocarditis (5).

Heart failure and pulmonary oedema usually appear after the second trimester of pregnancy but are even more frequent and severe at the term. Their appearance during the tree first months worsens the prognosis. endocarditis may occur after childbirth, especially if aortic or mitral disease are associated, these complications being more frequent the sever hypertension. Control of this arterial hypertension is therefore essential, using a variety of antihypertensive drugs, with a preference for beta-blockers. However, this is difficult because of the need to maintain perfusion pressure beyond the coarctation, particularly in the uterine arteries, to allow fetal development, with the risk of arterial hypertension persisting despite treatment of the coarctation (6).

During labor, the main objective of management is to avoid abrupt changes in loading conditions that could lead to decompensation cardiac arrest in these patients with limited adaptability. Titrated epidural analgesia is recommended for vaginal deliveries to attenuate the adrenergic discharge secondary to uterine contractions, and expulsion can be facilitated by instrumental extraction to reduce pushing effort. In the case of Caesarean section, spinal anesthesia is usually contraindicated due to the abrupt hemodynamic changes it induces, while general anesthesia with appropriate hemodynamic monitoring remains the technique of choice. Combined peri-spinal anesthesia appears to be an intermediate solution combining the advantages of both techniques (6).

Most authors suggested contraception, sterilization, Caesarean section, or therapeutic abortion. Caesarean section was indicated in this patient after multidisciplinary consultation between anesthetist, cardiologists, and obstetrician (6).

During pregnancy, the best means of diagnosis is magnetic resonance imaging, as it is non-invasive, and does not use ionizing radiation, no adverse effects on the fetus have been described. When medical management with typical antihypertensive drugs fails to decrease the coarctation gradient, invasive intervention may be indicated (4). Management of COA is dependent upon the patient's age, size (weight, length, and width of the coarctation), and coarctation characteristics. Surgical resection is recommended for neonates and young children. Transcatheter treatment is preferred for adults (5).

Invasive intervention of aortic COA is usually reserved for gradients of ≥20 mm Hg (7). Gradients <20 mm Hg should be considered for intervention when superimposed over heart structural defects, hypertension, heart failure, or a life-threatening symptom profile as seen in this patient (7). Another point of consideration is the use of fluoroscopy. Ideally, radiation should be avoided in pregnancy as there is no safe dose, but in life-threatening situations, such as significant COA, the use of diagnostic examinations to preserve the life of the mother can outweigh the risks. Specific precautions should be taken to limit fetal exposure to radiation, including limiting fluoroscopic time and positioning of the beam to avoid positioning the fetus in a direct line (8).

When invasive intervention for COA is indicated, treatment options include balloon angioplasty alone, transcatheter stent implantation, and surgical coarctectomy (4). To the best of the present authors' knowledge, only one

other transcatheter stent has been successfully placed during pregnancy for treatment of COA (3).

Post-operative follow-up is important and is based on annual medical monitoring to assess hypertension, ventricular function, and signs of coronary artery disease, and on morphological follow-up by angio-MRI or angio-CT every five years to look for aneurysms, false aneurysms, recurrence of coarctation and aortic dissection. Angio-CT is preferred for endovascular treatment because of the artefacts generated by magnetic resonance stents (9)(10)(11).

IV. CONCLUSION

Major cardiovascular complications were uncommon but continue to be a concern for coarctation patients who become pregnant. Systemic hypertension during pregnancy was common and associated with the presence of a significant coarctation gradient. Endovascular treatment represents a highly attractive alternative, avoiding all the complications inherent in conventional treatment. The main message remains that of lifelong clinical and imaging monitoring.

- *Declaration of Interest*

The authors report no declarations of interest.

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