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Cae Report

Ischemic Heart Disease and Pregnancy: A Case Report

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Abstract

Heart disease is the leading cause of non-obstetric mortality in parturients, accounting for 15-20% of maternal deaths (1,5).

The presence of severe heart disease is considered a contraindication to pregnancy.

The management of these patients is based on a planned multidisciplinary approach, pre-, peri- and post-partum.

Observation

Case 1: The patient was 42 years old, multiparous (IVG/IVP : (3 live vaginal births and one by cesarean section), with a history of type 2 diabetes on insulin and a history of ST-positive coronary syndrome in the anterosepto-apical region (in December 2023), with failed thrombolysis at H4 of pain.

TTE initially revealed 45% left ventricular dysfunction with severe PAH.

Coronary angiography revealed intermediate lesions of the IVA encompassing the first diagonal with bifurcation lesions.

The patient was put on a beta-blocker, diuretic and aspirin-based treatment regimen, without contraception.

7 months later, the patient presented with delayed menstruation and an evolving monofetal pregnancy with biometries 4 months old.

The patient was referred to us for adaptation of treatment to avoid fetal teratogenicity, and to discuss a termination of pregnancy.

Given the patient's non-consent to termination of the pregnancy, the decision was made to carry out a close follow-up between the two disciplines : maternity and cardiology.

10 weeks later (at 32 weeks' gestation), the evolution was marked by worsening cardiac damage (LVEF : 30%), and the decision was made to terminate the pregnancy.

High-route extraction under combined peri-Rachi.

The result was a newborn baby of similar sex, apgar and birth weight.

The patient was admitted to the intensive care unit for strict monitoring and, given her good post-partum progress, was discharged with her treatment and appointments.

Case 2: The patient was a 34-year-old patient, multiparous (IVG/IVP) (3 live vaginal births), followed for ischemic heart disease having benefited from quadri bypass, aorto-coronary in October 2023 put on B Blocker and aspirin.

Admitted to our facility for delivery of an unattended pregnancy of 39 days'

gestation, according to a single ultrasound scan containing biometries of 26 days' gestation.

On admission, patient conscious, hemodynamically and respiratorily stable, not in labor, PDEI.

Obstetrical ultrasound: GMFE, AC+, GC at 5 cm with biometries of 36SA with EPF: 2885+/- 425g.

The trans-thoracic echocardiography revealed ischemic cardiomyopathy with EFW : 53%, no valvular disease with a low probability of PH.

The route of delivery was decided to be mechanical induction.

Delivery was by vaginal route without episiotomy, giving birth to a new born male F, 3100g, 10/10.

The post-partum period was unremarkable.

Discussion

Ischemic heart disease in pregnancy falls into two main categories:

- Pre-existing ischemic heart disease,
- Pregnancy-associated myocardial infarction (PAMI).

In our study, we will discuss the first category, that of women with pre-existing ischemic heart disease.

Women with a history of pre-existing ischemic heart disease require early and thorough preconception counseling, so during the first consultation, a precise and complete diagnosis of the heart disease will be made, and a stratification of the risks incurred will be carried out, notably the maternal prognosis, the risk of possible functional limitation and the risk of heart disease in the fetus (14).

Pregnancy is a particular physiological state, which has the particular property of establishing a new physiological equilibrium within several systems, in particular the cardiovascular system.

As a reminder, during pregnancy:

• Cardiac output increases progressively by 30-50% due to the increase in ejection volume and heart rate.

• The increase in ejection volume peaks at around 30-34 weeks of amenorrhea, secondary to the rise in plasma volume (30-50%) and red blood cell count (20-30%).

• Heart rate also increases progressively from around 15 to 20 beats/min, reaching a maximum by 32 weeks' gestation.

• Due to the development of a low-resistance placental circulation and vasodilatory mediators (NO, prostaglandins, prostacyclins), blood pressure

• Falls to a nadir between 18-26 SA, then returns to initial values at the end of pregnancy.

• Labor and delivery itself are associated with significant hemodynamic changes, due to anxiety, exercise, pain, uterine contractions, the woman's position (left lateral decubitus versus dorsal decubitus) and bleeding.

• Because uterine contractions increase preload, cardiac output increases during labor (15% at the start of labor and around 25% during the active phase, 50% during pushing efforts).

• In the immediate post-partum period, it increases by 80% due to autotransfusion caused by uterine retraction.

• Blood pressure also rises with each uterine contraction and during pushing.

These various changes imposed by pregnancy and childbirth can decompensate a parturient's pre-existing heart disease. (1).

The management of a pregnant patient with a history of acute coronary syndrome requires a multidisciplinary approach and rigorous monitoring throughout the pregnancy.

Obstetric and neonatal complications are also increased in pre-existing maternal heart disease (5).

Several studies have demonstrated a higher risk of preterm delivery, postpartum hemorrhage, gravid hypertension or preeclampsia (6,8).

Perinatal complications complicate 20-28% of pregnancies, notably prematurity, intrauterine growth retardation (IUGR), in-utero death, respiratory distress and intraventricular hemorrhage

Several studies have demonstrated a higher risk of maternal complications, notably post-partum hemorrhage, gravid hypertension or pre-eclampsia (6,8,13).

Traditional risk factors for pregnancy-associated myocardial infarction (PAMI) are similar to those observed in non-pregnant patients. These include age, family history of premature coronary artery disease, diabetes, hypertension, dyslipidemia, smoking, obesity and physical inactivity (7).

Smoking is a traditional, crucial and modifiable risk factor for acute coronary syndrome, and increases the risk of acute myocardial infarction by a factor of 7 in women under 55 (7).

ACS describes a range of clinical presentations, from ST-segment elevation myocardial infarction (STEMI) to non-ST-segment elevation myocardial infarction (NSTEMI), to unstable angina of any etiology.

Advanced maternal age is one of the most frequently reported risk factors for PAI, as research has shown that there is a 20% increase in the risk of AMI for each annual increase in maternal age (4, 5, 6).

History of ischemic heart disease in pregnant women is on the increase, but there are few data in the literature on the subject, and no international recommendations for the codified management of these patients.

The recommendations of the European Society of Cardiology (ESC) mention the management of acute coronary syndrome (ACS) during pregnancy, but do not provide any guidance on the management of pregnant patients with a history of ischemic heart disease (8,15).

The main objective is to minimize risk to mother and child, while optimizing cardiac health management.

The NYHA (New York Heart Association) classification is the standard tool for describing the functional impact of heart failure in a patient (11).

Severe left ventricular dysfunction (LVEF < 30%, NYHA III or IV) is a formal contraindication to pregnancy (3, 13,15).

In the case of known coronary disease, a preconceptional cardiological opinion should be sought. A cardiac ultrasound and an ischemic test or coroscanner will be performed prior to pregnancy to assess the risk.

However, in the event of pregnancy in a patient with severe left ventricular dysfunction, medical termination may be discussed, and monthly to fortnightly cardiological follow-up instituted.

In the case of moderate ventricular dysfunction, the risk must be established on an individual basis in order to plan cardiological pregnancy follow-up (tri-monthly to fortnightly). Cardiological and obstetrical follow-up is carried out in collaboration, in a multidisciplinary center.

A preconception consultation with a cardiologist is essential to staging the patient's cardiac risk, informing her of the impact of pregnancy on her pathology and vice versa, and making any necessary therapeutic adjustments (9, 10, 13).

Maternal-fetal morbidity in patients with heart disease is correlated with their NYHA stage. In stages I or II, maternal mortality is less than 1%; in stages III or IV, it reaches 5-15%. Fetal mortality reaches 30% in stage IV patients (13).

Medical treatment aims to regulate heart rate, reduce cardiac overload and improve myocardial contractility. Antiplatelet agents (acetylsalicylic acid, clopidogrel), beta-blockers (bisoprolol, labetalol, propanolol, metoprolol), nitrates, digoxin, calcium channel blockers, antihypertensives (central antihypertensives and beta-blockers), heparins (fractionated and low-molecular-weight) and danaparoid sodium are all suitable for use during pregnancy.

Diuretics, ACE inhibitors, ARB IIs, VKAs, cordarone and statins are contraindicated during pregnancy and should be discontinued (7).

It is recommended that VKAs be replaced by heparin (LMWH or unfractionated heparin) as soon as possible.

The route of delivery should be discussed as early as the end of the second trimester. The majority of recommendations are for spontaneous labor, vaginal delivery, epidural anesthesia or combined epidural spinal anesthesia, and the use of oxytocin as a slow infusion rather than a bolus to avoid hypotension. Delivery may be assisted by forceps or vacuum extraction, depending on the mother's condition.

Caesarean section may be indicated for obstetrical causes, pulmonary hypertension or cardiac lesions. The literature shows a high caesarean section rate (61%), which is probably due to the age of the publications and the fact that only the most serious cases are classically reported (10 11 12).

Conclusion

The main etiologies are myocardial infarction, aortic dissection and cardiomyopathy. However, maternal heart disease pre-existing pregnancy, such as congenital heart disease, is more frequently encountered, and may be associated with significant maternal and perinatal morbidity.

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