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Cardiac disease and pregnancy a case series of 30 patients

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Abstract: *Cardiac disease, complicats approximately 1 to 4% of pregnancy [1], and represents the main cause of maternal death of non obstetric origin. Our study's objective was to evaluate the particularity of the management of cardiac diseas during pregnancy, to analysed the maternal, obstetric and featl outcomes of pregnant women according to the type of heart disease.A retrospective study was carried out in the department of G.O I at University Hospital Hassan II, Fez including 30 cases of cardiac diseas during pregnancy in a period of 6 years extending from january 2016 to december 2021.The mean age of patients was around 31 years. 70% of them was multiparous, 13% have a history of rheumatic fever, 6% of chronic hypertention and 3% of hyperthyroidism.Rhematic valvular heart disease was the most common lesion observed in 53% of cases. Conginital heart diseas was occuring in 20% of cases.Preexsting cardiac diseas was observed in 60% of cases against 40% of cases revealed during pregnancy. 16,6% of cases has been treated by surgery or interventional cardiology. Cesarien delivery has been performed in 56% of cases. The incidence of maternal mortality and morbidity were 3% and 13% respectively. As the fetal prognosis, premature delivery was indicated in 13,2% of cases. Optimal management of the pregnant cardiac patient relies on multidisciplinary care including cardiologist, obstetrician, cardiothoracic surgeon, anesthetist, neonatologist and pediatric cardiologist.*

Keywords : cardiac disease, pregnancy, multidisciplinary management, delivery.

1. INTRODUCTION

Cardiac disease is the main cause of maternal death, approximately 1 to 4% of pregnant women are affected by cardiac disease [1].

Among cardiac diseases during pregnancy; valvular rheumatic ones are the most prevelent in developing countries, particularly valvular stenosis which seem to be the mos at risk. Non valvular heart disease are less common but also are linked to an increased maternal- fetal risk .

2. MATERIAL AND METHODS :

In this study, we report a series of 30 cases of pregnant women who had history of heart disease or in whom a diagnosis of cardiac disease has been made during pregnancy, and who have been admitted to the department of gynecology-obstetrics I, University Hospital Hassan II, Fez in a period of 6 years between january 2016 to december 2021.

3. RESULTS :

- **Frequency** : A total of 24,192 patients were addmitted to the Gynecology-obstetrics department for giving birth during a period of 6 years extending from 2016 to 2021, among whom 50 were followed for cardiac disease which is 0,2%, only 30 patients was included in our study.
- **Age** : The ages of patients range from 19 to 41 years old. The average age of patients was 31 years with a predominance between 30 and 40 years (30%) (Fig 1).

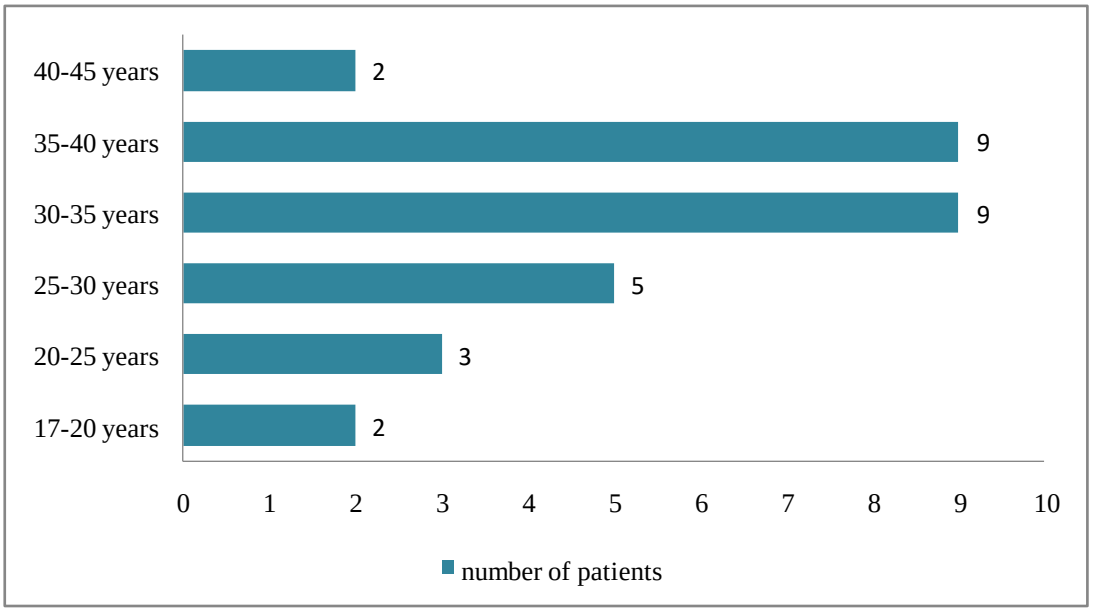

Figure 1: Number of cardiac pregnants by age range

- **Obstetric history** : In our series, 9 patients were primiparous against 21 patients were multiparous, six of whom have already given birth by cesearn section (Fig 2).

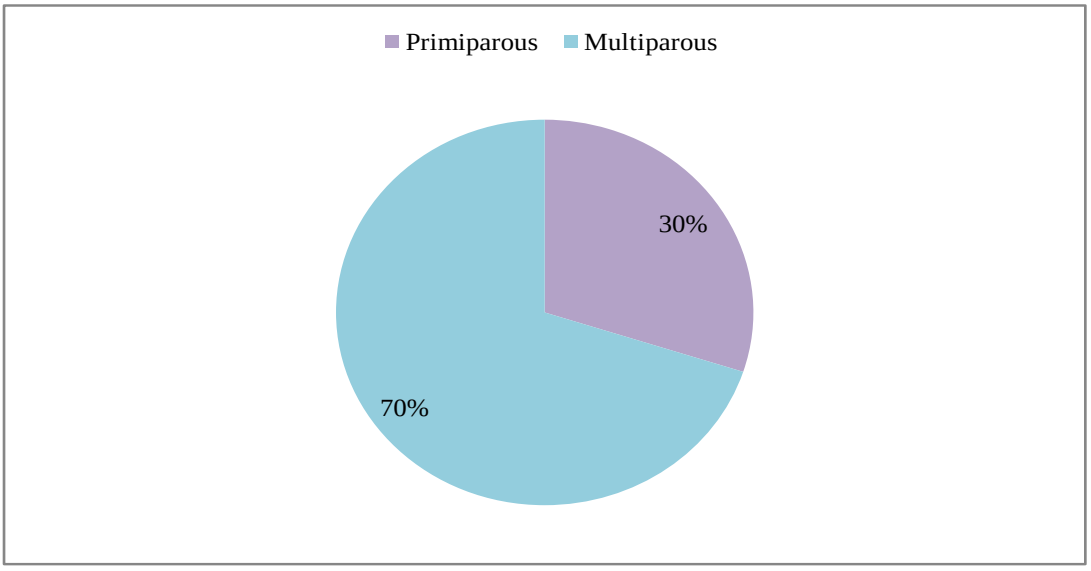

Fig 2 : Parity of cardiac pregnants.

- **Médical, surgical history :** concerning our patient's history, 4 patients had history of gestational diabetes, 4 patients were knoun to have a history of acute rhematic fever, 2 patients had a chronic hypertention and 1 patient was known to have hyper thyroidism due to Basedow disease (Fig 3).

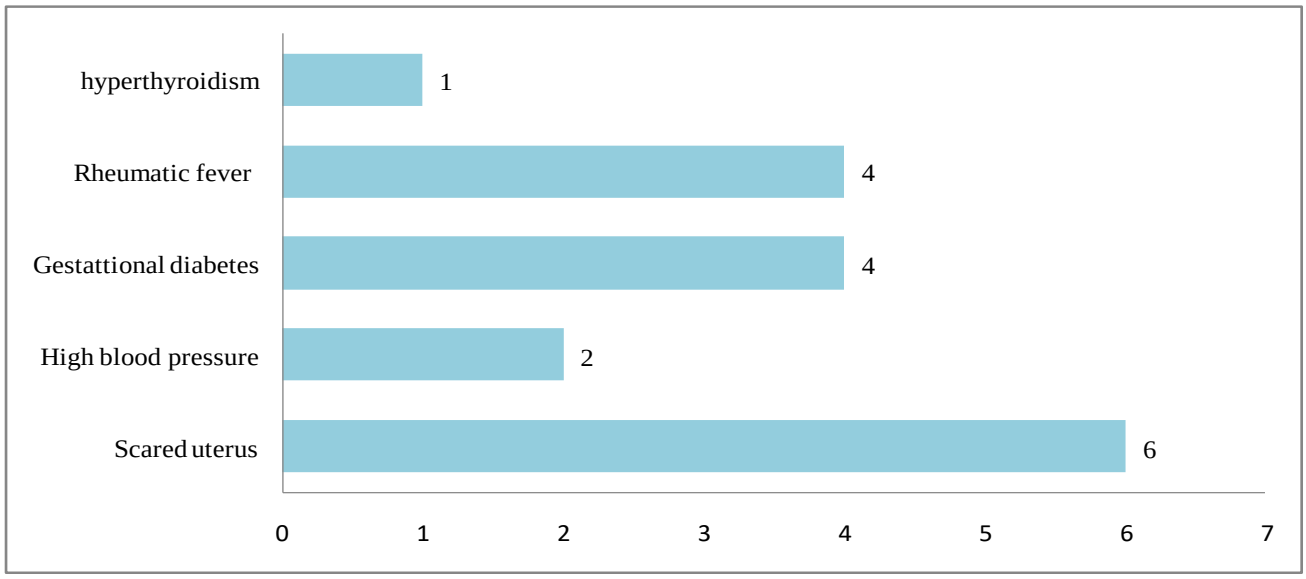

Fig 3 : Pathological history.

- **Type of cardiac disease :** The percentage of heart disorders was 53,3% and 20% for rheumatic heart disease and congenital heart disease respectively. There were 3 cases of ishemic heart disease, 2 cardiomypathy cases, 2 arrythmia cases (supra ventricular tachycardia TSV, Wolf Parkinson-white WPW) and one case of cardiothyreosis. Mitral stenosis was the most common valvular lesion observed in 13 cases (43% of cases). 4 patients were operated before pregnancy, 2 cases with prothetic valve, 1 case with mitral-plasty and one patient had transluminal angioplasty of the coronary artery. Congenital heart disease were represented by 2 patent ductus arterious cases, 2 cases of coarctation of the aorta and 2 atrial septal defect cases one of whom was operated during pregnancy (Fig 4, Fig 5).

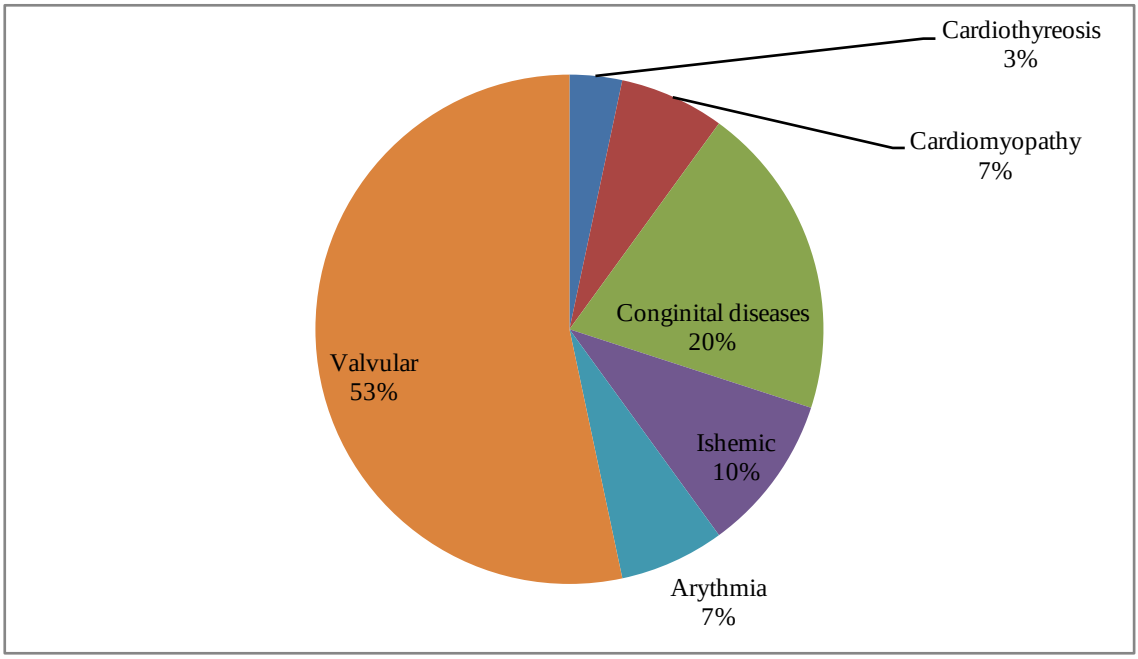

Fig 4 : Patients over types of cardiac disease.

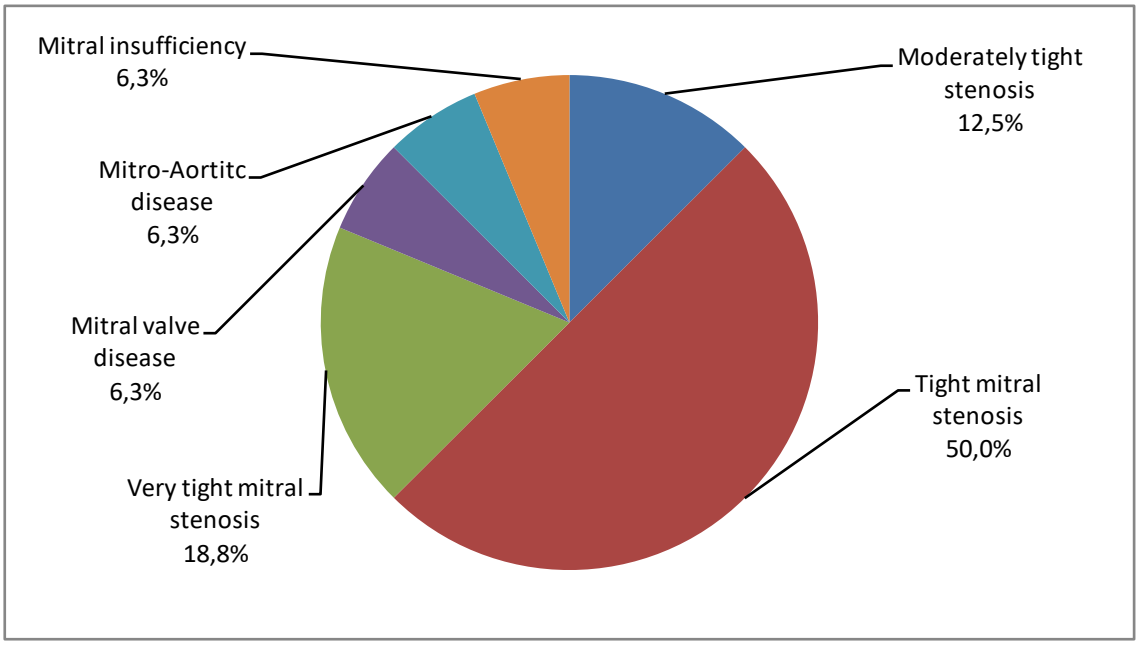

Fig 5 : Patients over types of valvular heart disease.

- **Circumstances of discovery :** The cardiac disease was revealed in the majority of cases by dyspnea in 80% of cases (Fig 6). The clinical stages of the patients according to the NYHA staging system were determinated to be 86,8% and 13,2% in NYHA stage I, II and III-IV, respectively.

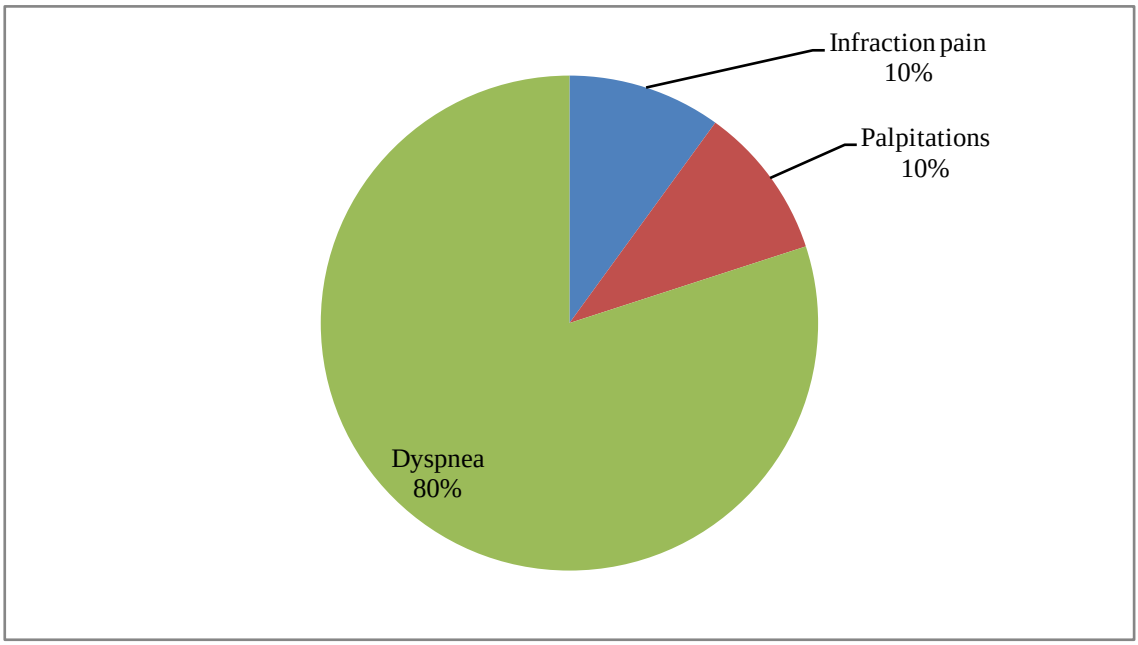

Fig 6 : Circumstances of discovery

- **Complications during pregnancy :** Several complications have been reported during pregnancy, these include 14 cases of dysarythmia (46,7%) including 11 cases of ACFA, 1 case of SVT , 1case of Atrial Flutter, 1 case of WPW and 2 cases of Acute decompensed heart failure occuring in a context of dilated cardiomyopathy and atrial septal defect leading to urgent termination of pregnancy.
- **Management of delivery :** The gestational age at birth was at term in 86,7% of cases (26 cases), prematurely in 13,3% (4 cases) in a context of maternal rescue in 2 cases and acute fetal distress in 2 cases. The mode of delivery was by cesarean section in

56,7% of cases whose indications were mainly dominated by maternal cardiac conditions in 70,6% of cases against 29,4% for obstetric indication. Vaginal delivery was accepted in 43,3%.

- **Past partum period :** Maternal morbidity was observed in 13,3% of cases with one case of pulmonary embolism with favorable outcome. An ischemic strocke was occured in one patient on day 8 of post partum with a stay in intensive care having been complicated by a commitment under falcoriel, a decompressive hemi craniectomy was performed. Acute decompensated heart failure occured in 2 patients with cardiomypathy and atrial septal defect with good progress. Maternal mortality occured in 1 case with cardiothyreosis (3,3% of cases). There was one case of stillbirth, 4 cases of fetal distress related to preterm delivery who were admitted to neonatal intensive care unit with good clinical improvement.

4. DISCUSSION :

Pregnancy has a dramatic effect on the cardiovascular system during pregnancy and can be sustained into the post partum period. Those changes include decrease in systemic vascular resistance, increase in intravascular volume, variation in cardiac output and hypercoagulability [2]. There is an increase in cardiac output in the the first trimester reaching a maximum value of up to 50% at 24 week [3]. Clinical assessment of the cardiac pregnant patient can be difficult since similar symptoms of pregnancy. Signs which are abnormal in pregnancy include : Heart rate> 100bpm 4th heart sound, harsh systolic murmur, daistolic murmur, marked oedema and jugular venous pressure of > 2cm [4].

The frequency of cardiac disease in patients in our study was 0,2%, this was in accordance with literature with a rate of 0,2% to 4% [5,2]. Valvular heart disease constitute the most common lesion in our study with 53% of heart diseases in patients admitted to our department which is in accordance with literature with a real predominance in developing countries which is explained by the high rates of rhumatic fever [6,7]. In most western countries, most women admitted in obstetric services have congenital heart disease [8].

Mitral stenosis is the most frequent heart condition in pregnancy and predisposes to maternal and fetal complication [8]. Most patients with heart disease will have a problem-free pregnancy, but certain conditions such as mitral or aortic stenosis can put them at risk of decompensation even if they have never had complication before pregnancy. Several risk score have been proposed to estimate the risk of maternal complication. The modified WHO risk classification provides a first impression about the potential risk of pregnancy. In women with congenital heart disease, the WHO calssification seems to perform best [9,10]. A highest risk of maternal mortality is observed in patients with certain condition such as a scored NYAH III or IV, coronary artery disease, pulmonary hypertention, cardiomyopathy or Marfan disease [11,12,13].

Complications during pregnancy depends on the type of cardiac pathology with arythmias and heart failure being most common [14].

Acute coronary syndrome (ACS) is uncommon in pregnancy estimates to 1 to 2 per 35000 deliveries [15]. However, it was been repported in many observations due to the increasing age of that women are becoming pregnant, and the increasing incidence of risk factors such as diabetes, obesity, smoking. In our study, 3 cases of ACS preexisting to pregnancy were been reported which is 10% of cases.

Cardiomyopathy is a rare condition during pregnancy and it is relied to a significantly elevated risk of maternal morbidity and mortality. Peripartum cardiomyopathy is the most common cardiomyopathy in pregnant women, following by hypertrophic and dilated cardiomypathy. In our study 2 patients with dilated cardiomyopathy, one of whom developped an acute decompensad heart failure which was delivered urgently.

The mode of delivery depends on obstetric indication and the maternal condition. Vaginal delivery is prefered for the patient with adequate cardiac output. According to the european guidelines, cesaren section should be limited to obstetric indications and specific conditions such as labor onset under oral anticoagulants, patients with aggressive aortic pathology, acute intractable heart failure and severe pulmonary hypertention [9] . However in our study we found high cesaren delivery rate which mostely indicated for maternal cardiac conditions which were represented by one case of cardiothyreosis, two cases of acute decompensad heart failure and two cases of coarctation of the aorta and seven cases of tigh-mitral stenosis.

5. CONCLUSION

Cardiac disease is an important cause of maternal and perinatal mortality and morbidity and is potentially avoidable with optimal care based on a multi-disciplinary approch involving collaboration between the obstetrician, cardiologist, anesthetist, neonatologist and cardiothoracic surrgeon. Pre-pregnancy counselling, recognition of risk factors, early diagnosis, close surveillance, the appropriate treatment are the principales of managment that ensure a good pregnancy outcome.

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