wjpmr, 2020,6(9), 08-18

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Research Article

ISSN 2455-3301

WJPMR

CARDIOPATHY AND PREGNANCY: ABOUT 12 CASES

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Article Received on 06/07/2020 **Article Revised on 27/07/2020** **Article Accepted on 17/08/2020**

I- INTRODUCTION

Pregnancy in women with heart disease is relatively rare and stable (about 1% of pregnancies since 1930), but is a major cause of maternal morbidity and even mortality.[1] Indeed, during pregnancy and the postpartum period, important cardio-circulatory changes occur that can aggravate heart disease. In developed countries, the distribution of heart disease has changed over the last 30 years due to improved health conditions, a reduction in the incidence of rheumatic fever and increased life expectancy, with congenital heart disease predominating.

On the contrary, in developing countries, including Morocco, rheumatic heart disease remains dominant, with little treatment due to a lack of information, financial resources, delayed diagnosis and difficulties in treating rheumatic fever.

The pregnancy of these patients should ideally be planned in order to optimize functional status before conception. The management of women with heart disease should be multidisciplinary, involving a cardiologist, obstetrician, and anesthesiologist to ensure the best compromise between maternal status and fetal prognosis.[2]

II- MATERIALS AND METHODS

This work is a retrospective study based on the analysis of the records of 12 cardiac parturients, who were followed at the prenatal consultation in the Department of Gynecology Obstetrics Oncology and High Risk Pregnancy of the Maternity Souissi of Rabat Morocco, over a period of 2 years from January 2018 to December 2019, excluding hypertensive heart disease. The parameters analyzed were gestational and parity of parturients, type of heart disease, mode of delivery and fetal prognosis.

Inclusion criteria

Pregnant patients with known or discovered heart disease during pregnancy follow-up, with a medical, obstetrical or surgical history.

Exclusion Criteria

Pregnant patients with hypertensive heart disease and patients lost to follow-up during pregnancy monitoring.

Each of these patients received rigorous and methodical follow-up with multidisciplinary anesthesiologic-cardiologic-obstetric follow-up.

III-RESULTS

A/ Epidemiology

1/ Frequency

From January 1, 2018 to December 31, 2019, 12 pregnant women with heart disease were followed up at the prenatal consultation in the Department of Gynecology Obstetrics Oncology and High Risk Pregnancy of the Swiss Maternity Hospital in Rabat Morocco on a series of 890 parturients, a frequency of 1.3%.

2/ Characteristics of parturients

The age of pregnant women with heart disease varies between 21 and 40 years of age, with an average age of 30 and predominance of the 36-40 age group.

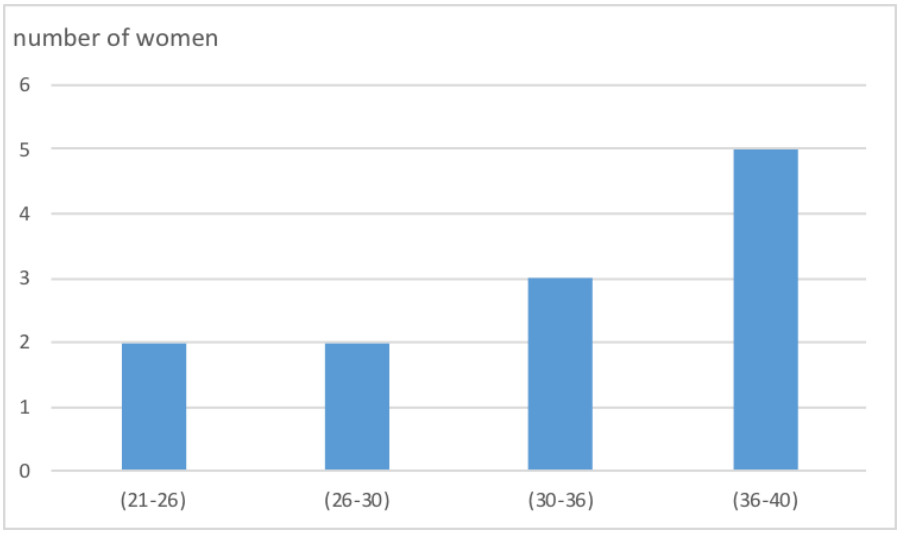

Diagram 1: Age distribution of our study population.

Regarding parity, 30% of the women were primipares, 30% were secondpares and 40% were multipares.

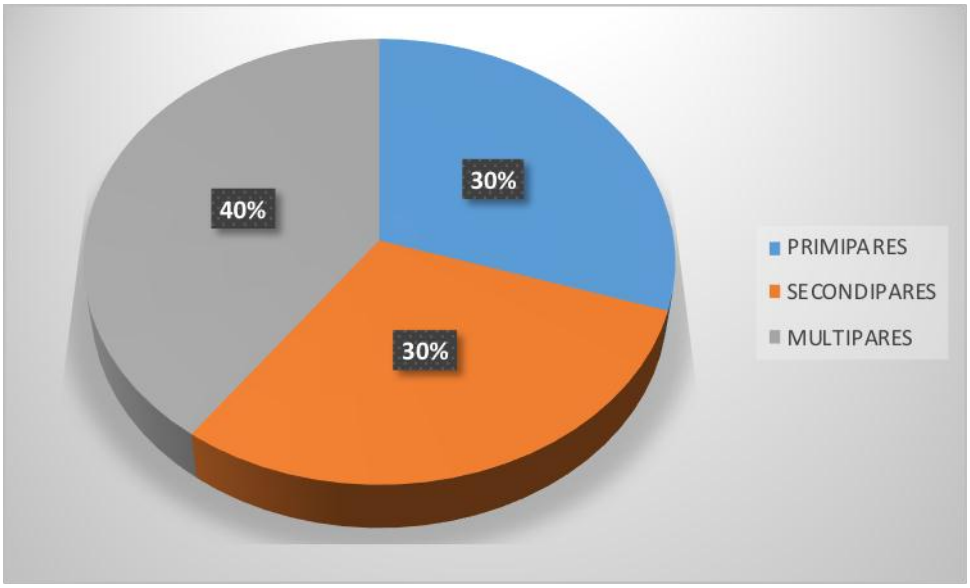

Diagram 2: Distribution of cardiopathy in women parity.

3/ Parturients history

5 pregnant women with heart disease had a history of abortion, a frequency of 41.66%.

8 pregnant women with heart disease had a history of AAR, a frequency of 66%.

2 pregnant women had a history of cardiac surgery, i.e. 16.7%.

4/ Nature of heart disease

Rheumatic heart disease was the most common, affecting 83.33% of pregnant women with heart disease.

Mitral damage was the most frequent valvulopathy in 80% of valvulopathies and polyvalvulopathy in 10% of cases.

Mitral narrowing was found in 5 cases, i.e. in 50% of the valvulopathies.

Mitral insufficiency affected 2 women, i.e. in 20% of the valvulopathies.

Mitral disease affected only one woman, i.e. 10% of the valvulopathies, whereas aortic narrowing was found in only one case, i.e. 10% of the valvulopathies.

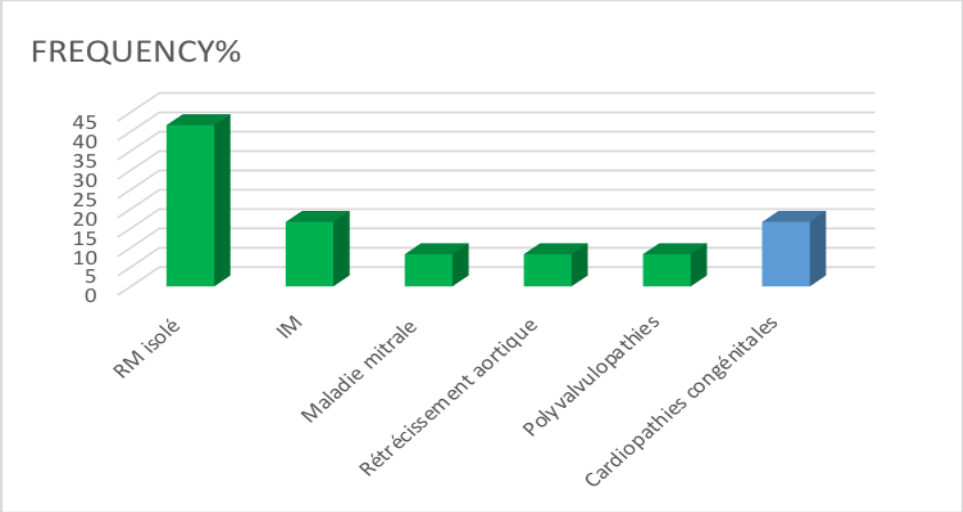

Diagram 3: Distribution of heart valve disease according to their frequency.

B/ Clinical and obstetrical profile

All women were followed jointly by an obstetrician, a cardiologist and an anesthesiologist.

8 women discovered their cardiopathies before pregnancy, i.e. (66.66%).

5 women discovered their heart disease during pregnancy, i.e. (41.66%).

7 women benefited from an echotransthoracic (ETT), i.e. 58.33%, and revealed a left atrium dilated to more than 40 mm in 3 women, i.e. 42.85% of the women having performed an ETT, while the ejection fraction was preserved in all the women.

Concerning the functional signs during the first consultation, dyspnea was found in the majority of the women, including those with valvular and symptomatic heart disease (NYHA greater than or equal to II) 4 of the 12 parturients had stage III NYHA dyspnea, i.e. 33.33%.

One woman, 8.33%, had stage IV NYHA dyspnea, and had rheumatic polyvalvulopathy complicated by left IC.

In the end, the dyspnea was distributed in the following way: NYHA stage I or 25%, NYHA stage II or 33.33%, NYHA stage III or 33.33%, NYHA stage IV or 8.33%.

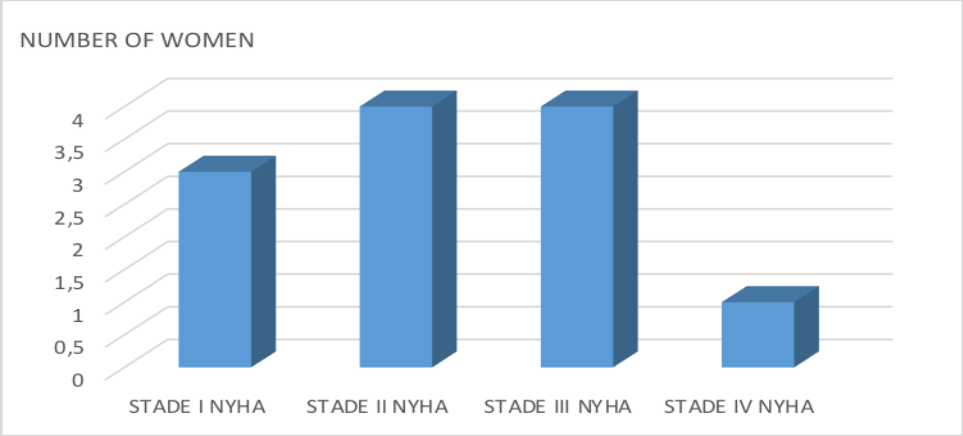

Diagram 4: NYHA classification of parturients by stage of dyspnea

Concerning medical treatment, a reassessment was carried out jointly with the cardiology team to optimize the functional status of patients and to eliminate teratogenic or fetotoxic drugs, in particular renin-angiotensin system inhibitors and amiodarone. For women undergoing surgery, anticoagulation was performed by sodic enoxaparin up to the 12th week of amenorrhea before relaying by acenocoumarol up to the 36th week with a return to sodic enoxaparin at the approach of term in order to prevent the risk of haemorrhage.

The extencillin injections in the 2 patients known to be RAA carriers were continued at the usual rate.

C/ Maternal Complications

5 women, or 41.66% of parturients, developed a complication during pregnancy.

3 women presented cardiac decompensation with left CARDIAC INSUFFICIENCY, i.e. 25% of parturients, and 2 women developed PAH, i.e. 16.66% of parturients.

All the other parturients evolved in a stable way without any notable complication.

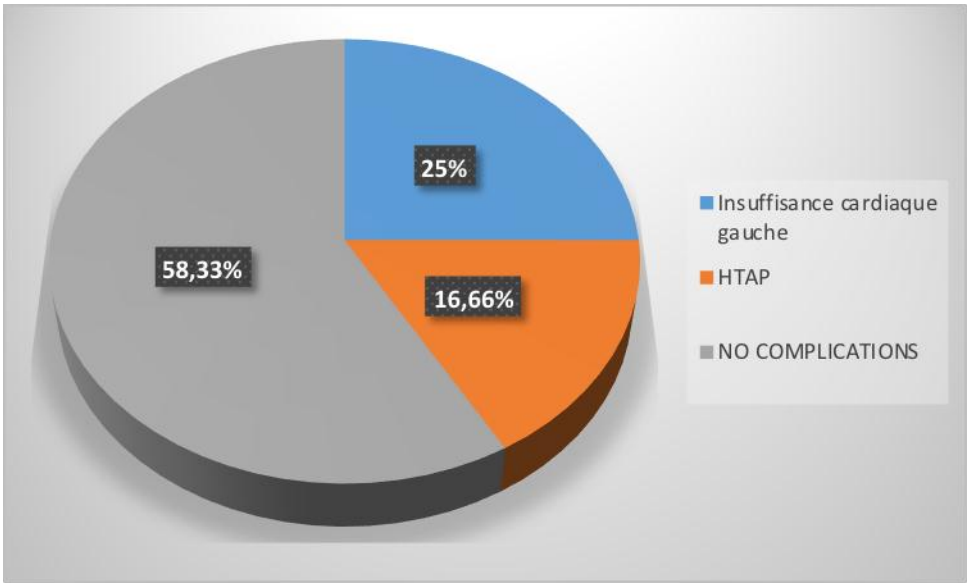

Diagram 5: Distribution of Maternal Complications in Pregnancy.

D/ FOETAL COMPLICATIONS

Fetal mortality was in the order of 8.33%. One stillbirth in a woman weighing 880g.

2 newborns or 16.66% were born prematurely, whose gestational age was estimated at 34 SA with respective weights of 1180g and 2250g.

The average weight of the children was 2960g with a minimum of 880g (MFIU) and maximum of 4200g.

Four children (33.33%) weighed < 2500g.

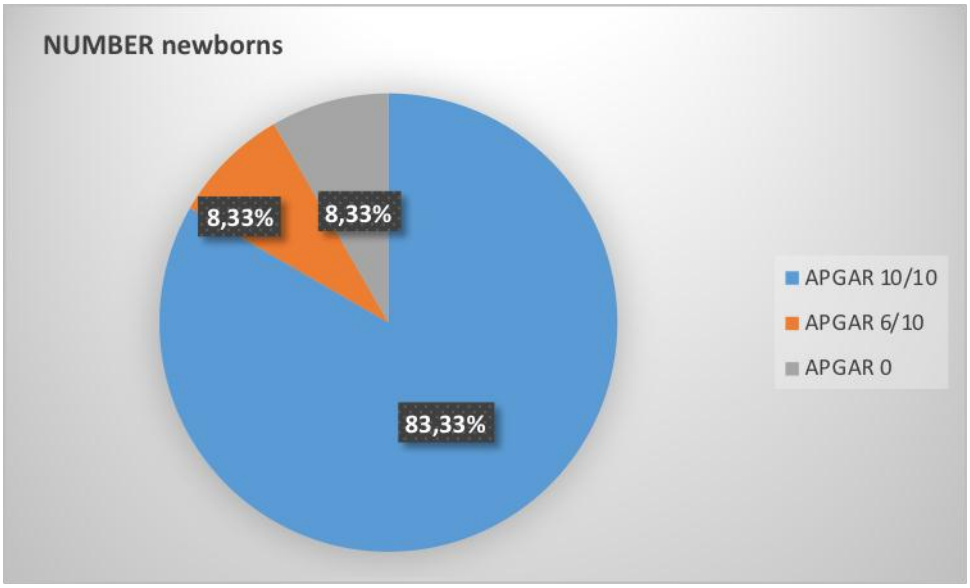

Diagram 6: Distribution of apgar's scores.

E/ MODE OF DELIVERY

9 women or 75% of pregnancies were carried to term.
8 women gave birth by the vaginal route, i.e. 58.33%.
4 women gave birth by Caesarean section, i.e. 33.33%, 2 for decompensated heart disease, 1 for macrosomia and 1 for mitral heart disease, contraindicating VB in view of its dyspnea stage.

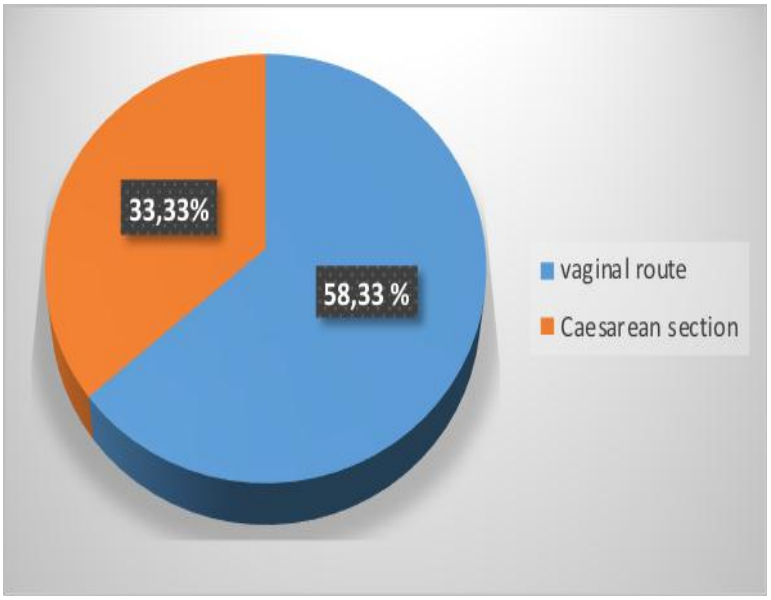

Diagram 7: Distribution of patients according to the mode of delivery.

IV-DISCUSSION

A/epidemiological parameters

1/ frequency

In the literature and since 1930, the incidence of cardiac pathologies in pregnant women has been stable between 1% and 2% with more recent estimates between 0.1 and 1.4%.[3,4]

In our series, it represents 1.30% of all women giving birth, which is close to the 0.99% presented in the Casablanca series.[5] and is in line with the statistics reported in certain European.[6] and African.[5;7;8;9] series.

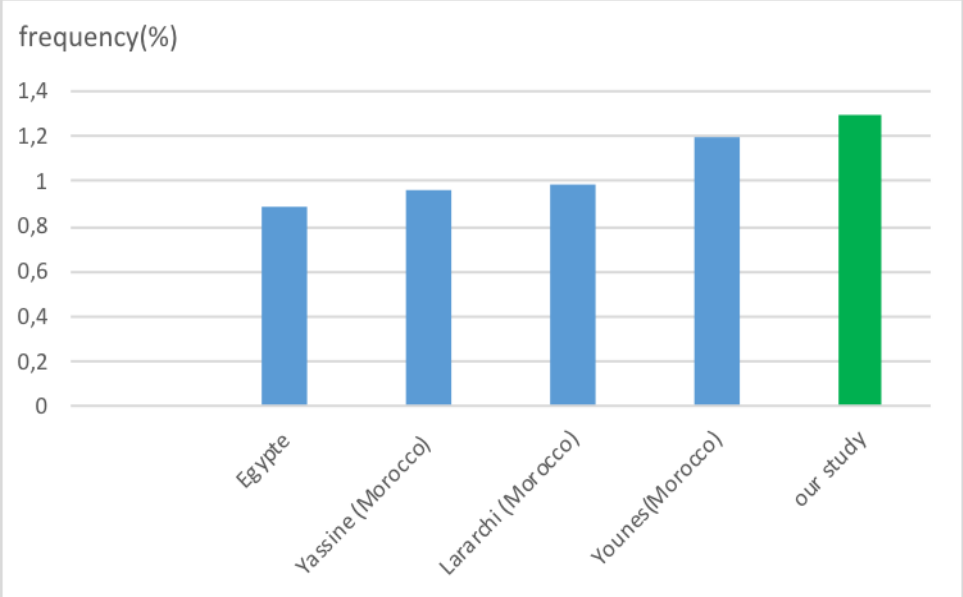

Diagram 8: Cardiopathy frequencies in world series.

2-Patients characteristics

The patient's age plays a major role in assessing maternal risk.

Our series had a mean age of 30 years.

The average age of cardiac parturients is similar in all the Moroccan series, whereas it is lower in the Senegalese and German series, as can be seen in diagram 9.[5;8;9;11;12]

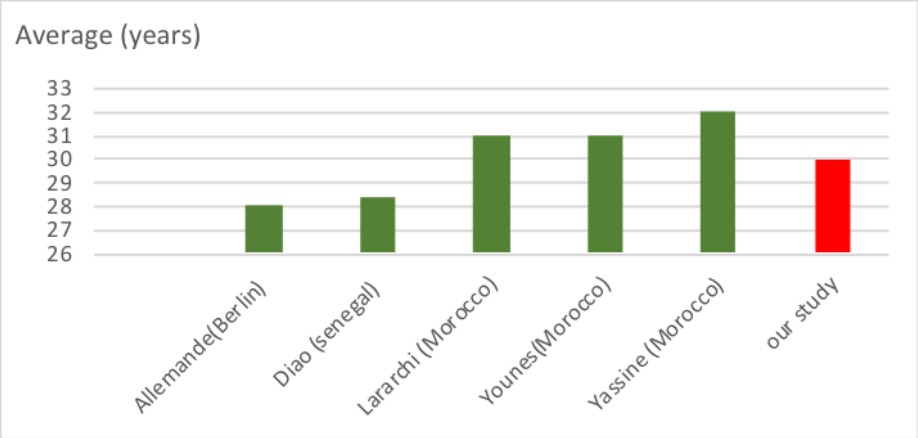

Diagram 9: Distribution of average age by series.

Parity is also implicated in the risk of maternal-fetal complications.

In the series studied, we note that multiparity is a common and majority character in all the African series, unlike the British series where the character of primiparity is dominant.[5;9;13;14]

In our series, multiparity was the most found.

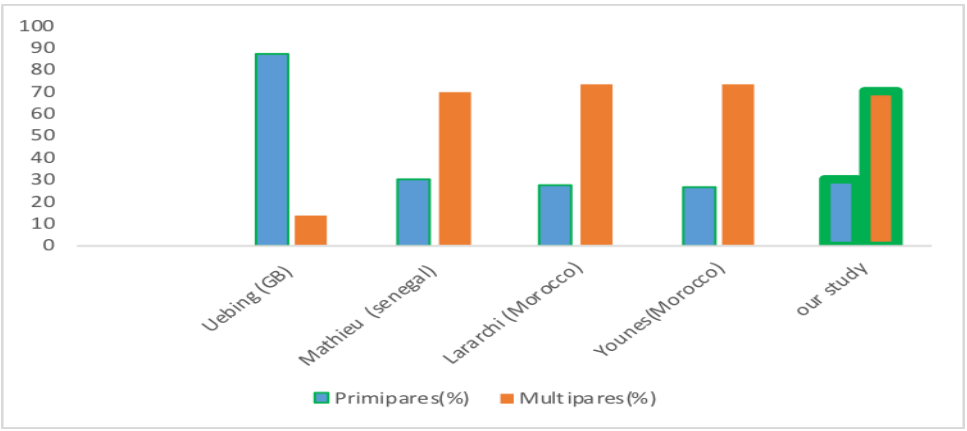

Diagram 10: Frequency of primipares and multipares patients by series.

B/ Antecedents Of Parturients

All the authors underline the predominance of rheumatic heart disease in the association of heart disease and pregnancy in underdeveloped countries.

Our series underlines a 66% rate of antecedents of RAA, which is in agreement with the other Moroccan and Senegalese series studied, while for those of interest to developed countries, this pathology has become exceptional.[1;9;14;15;16]

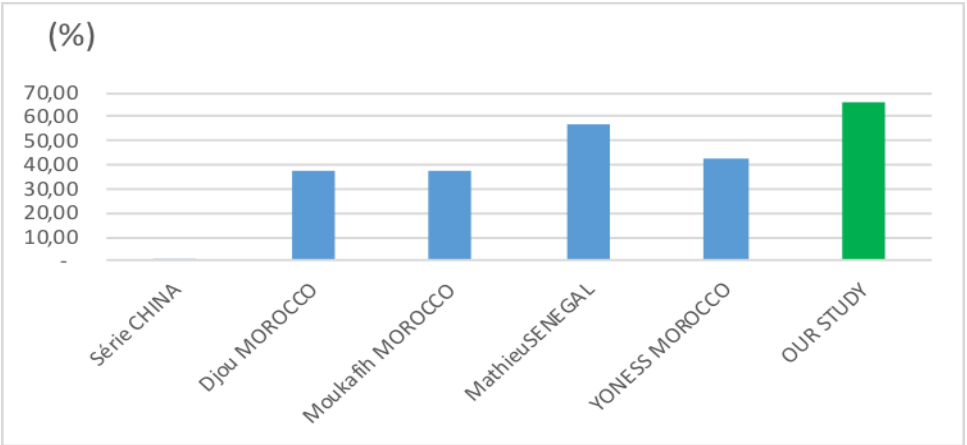

Diagram 11: Frequency of RAA's history in patients by series.

Compared to the Malhotra[17] series studied (cardiac women) with 22.1% and the control series (non-cardiac women) with 5.2%, we deduce that The risk of spontaneous abortion is very high among cardiac women, which explains the high rate of spontaneous abortion in our series of 41.66%; that of Fez with 42.31% and 48.48% in the USA series.

The same deduction for stillbirths is that according to Malhotra[17] the rate of stillbirths falls from 0.62% in the non-cardiac series to 6.4% in the cardiac series, which also explains the results in the Casablanca 4% series.

In our series, the history of neonatal mortality is nil, which is compatible with the results of the USA series,[18] and the FES series.[9]

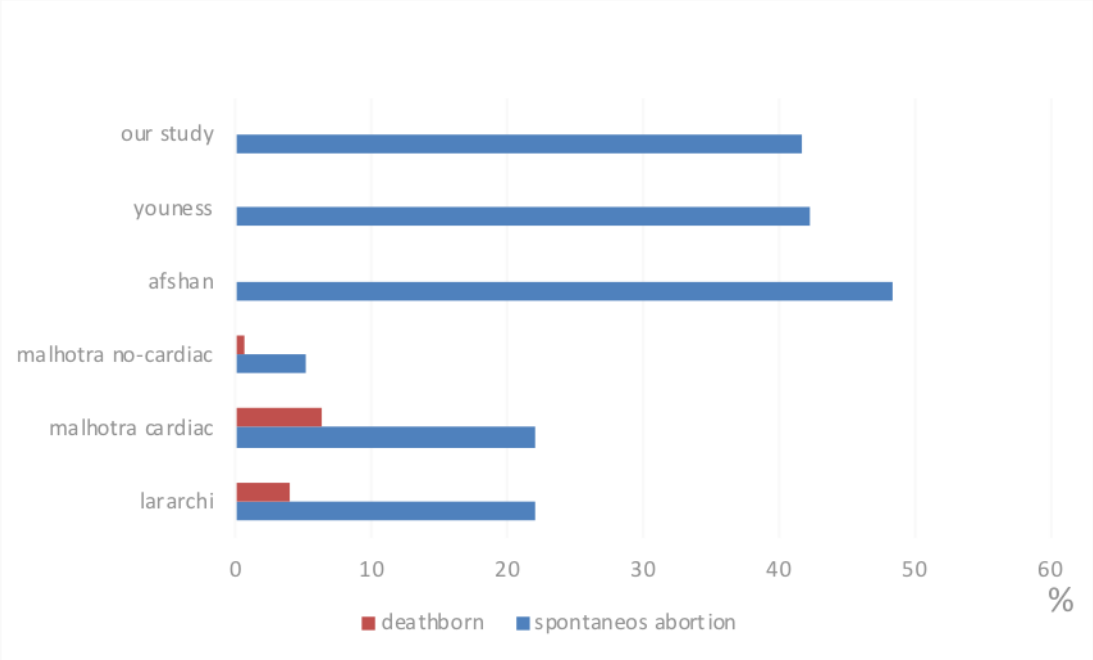

Diagram 12: Distribution of parturients by history of spontaneous abortion and death by series.

C/Nature Of Heart Disease

Rheumatic heart disease remains very dominant and worrying in developing countries (92% in Senegal and 82.2% in Morocco), which is in line with our rate of 83.33% [6;8;9;11;12;19].

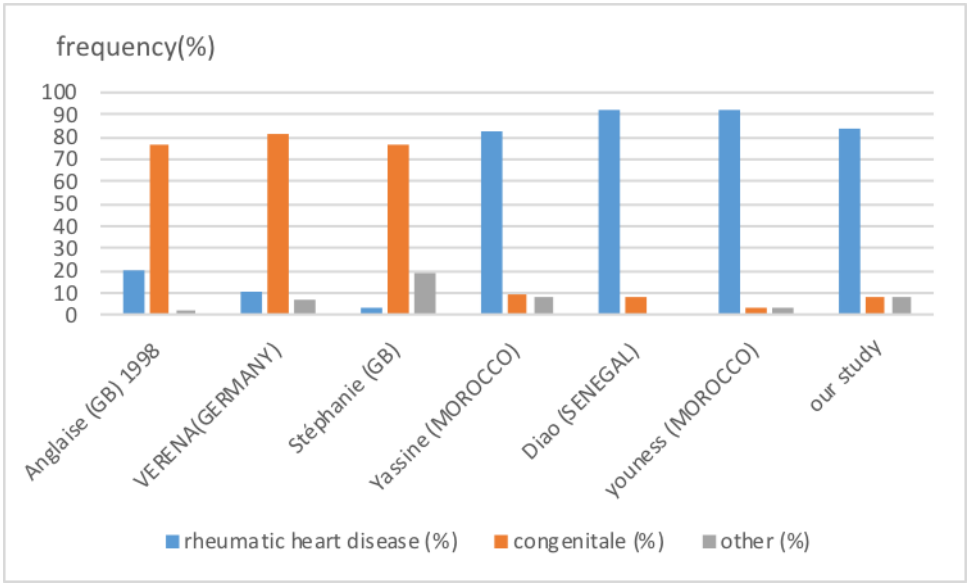

Diagram 13: Frequency of different types of heart disease by series

Mitral involvement dominates rheumatic valve involvement with a frequency between 38 and 90%.[20] with predominance of mitral narrowing, which remains the most frequent during pregnancy and the most likely to become complicated.[21]

Pregnancy is a definite decompensating factor in the decompensation of tight mitral narrowing.[11]

A decompensated mitral narrowing exposes to the risk of left heart failure with its manifestations: exertional dyspnea then decubitus, exertional cough, hemoptysis and even acute oedema of the lung [22,23;24;25].

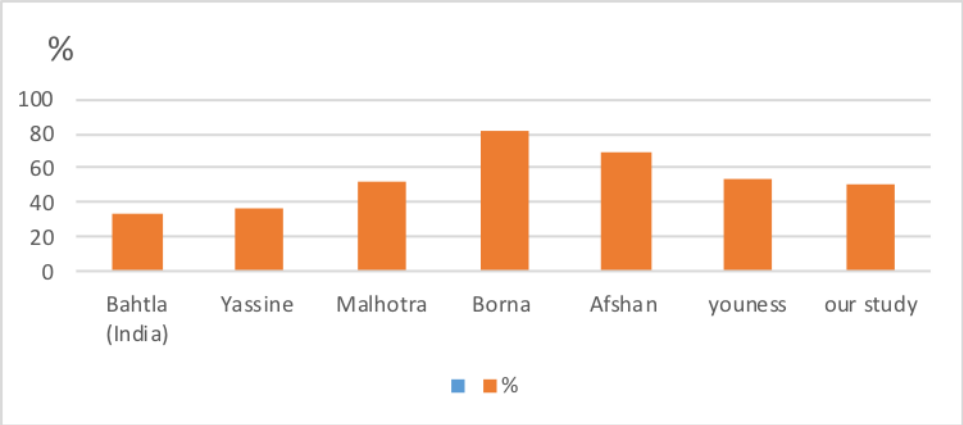

Diagram 14: MR frequency by series.

According to the results of our series, half of the parturients (58.33%) tolerated their heart disease (stage I and II.

dyspnea) while 41.67% of the parturients presented severe functional discomfort, which contrasts with the other.

series where a minority of women reached stage III and IV.

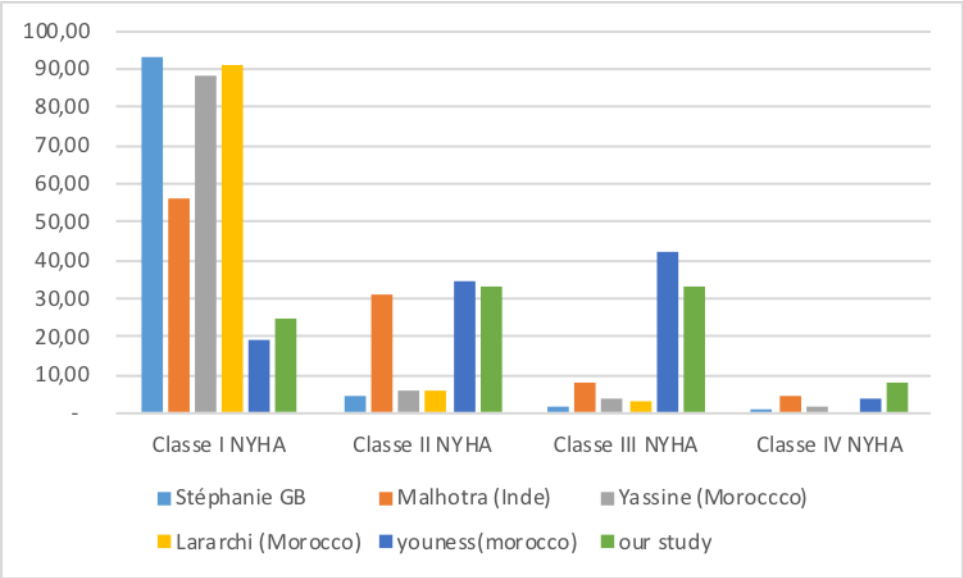

Diagram 15: Distribution of NYHA classification by series.

D/ Maternal Complications During Pregnancy

Maternal risks vary depending on the nature of the heart disease and its functional tolerance prior to conception and can range from deterioration of ventricular function to heart failure and even`death.

The highest levels of mortality between 25-50% are seen in patients with PAH, cyanogenic congenital heart disease, and severe left obstructive, valvular, or hypertrophic heart disease.

Maternal prognosis depends mainly on the stage of dyspnea according to NYHA: maternal mortality has been evaluated at < 1% for patients in class I or II before pregnancy and at 6-7% for class III or IV. [26;27;28]

In our series, we noted 5 women who presented complications during pregnancy, or 41.66% of parturients, which is close to the Senegalese series Doumbia.47;2%.[27] and Youness 50%.[9]

The Indian series,[24] returned to a rate of 29% while the German series showed the fewest complications with a rate of 12.9%.

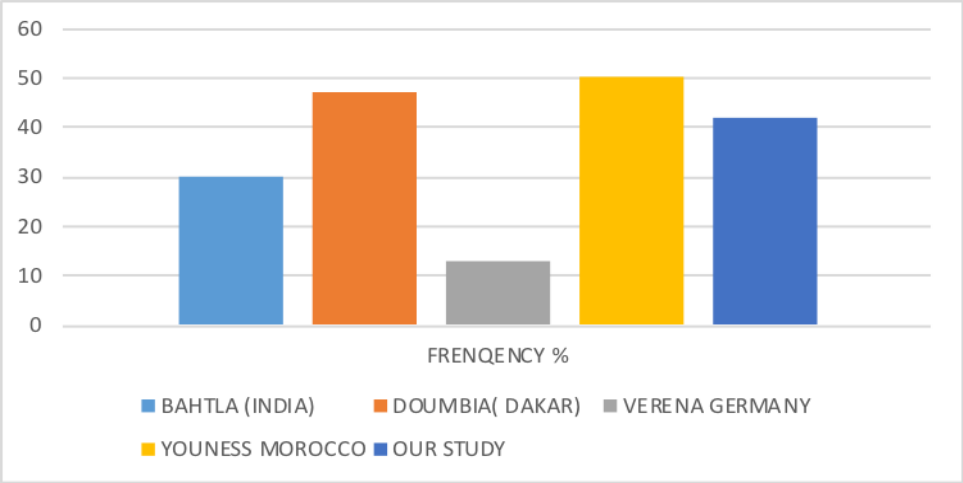

Diagram 16: Distribution of maternal complications during pregnancy by series.

E/ Fetal Complications

The risk of premature delivery in women with heart disease is higher than in the general population. The Malhotra study demonstrated this risk with 48.3% of premature babies in the cardiac series of women compared to 20.5% in the non-cardiac series.

The German study,[11] found prematurity in 64.7% of high-risk cardiac cases and 16.4% in low-risk women.

Despite the low rate of prematurity of 16.66% in our series compared to the Malhotra and German series, this rate remains higher than the general frequency of prematurity at the maternity hospital of Ibn Toufail in Marrakech with a rate of 1.5%[29] or in France where 6.8% of premature births are reported in cardiac patients.

The risk of spontaneous abortion is present in cases of complicated heart disease, and according to the authors, the perinatal mortality rate is directly related to the severity and nature of maternal valvulopathy.[30] It is minimal for NYHA class I and II patients, but reaches 30% for class IV patients (spontaneous mortality and therapeutic abortion for poor tolerance combined).[31]

In our series, the fetal mortality rate is 8.33% compared to 19.6% in the Dakar series.

F/ Mode of Delivery

According to the literature, the lower route is recommended if the heart disease is controlled (NYHA stage I and II).[28]

By comparing our series with all the studied series we deduce that the Low Way is recommended and the results are in line with the literature.

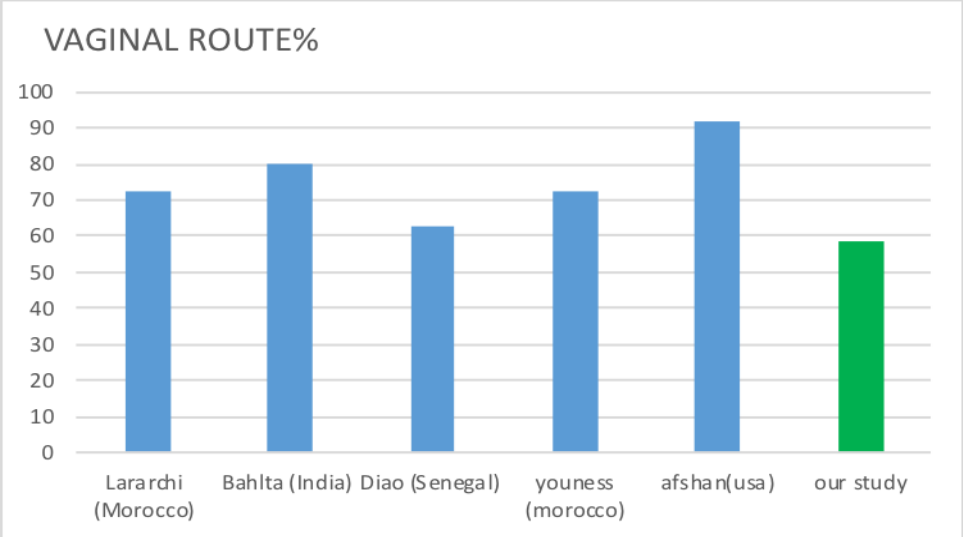

Diagram 17: Vaginal delivery by series.

The frequency of caesarean sections in our series is 33;33% and the results in our series are in the range of 8% in Afshan and 37% in Diao. The indications in 75% of caesarean sections are strictly cardiac and compatible with the literature, while 25% of caesarean sections are for obstetrical causes.

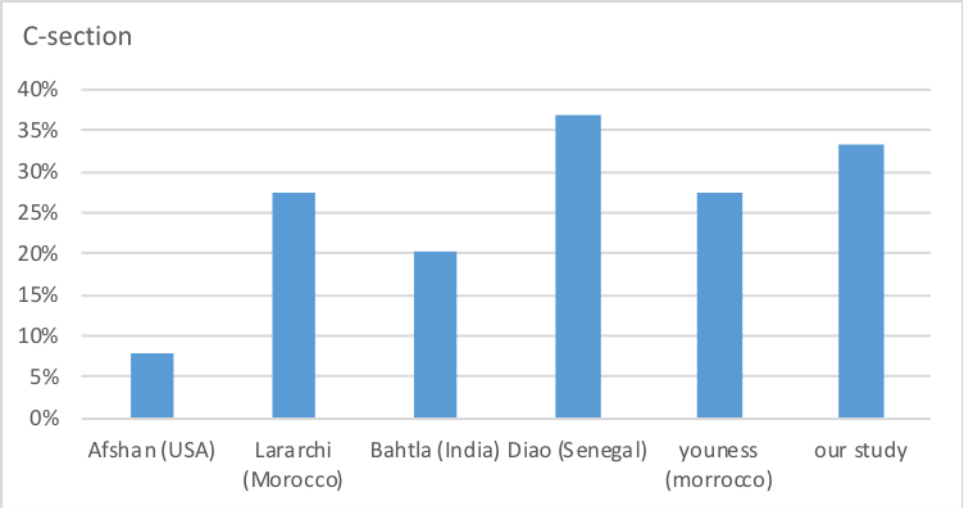

Diagram 18: C-Sections by series.

V. CONCLUSION

Pregnancy in pregnant women with valve disease or other heart disease is associated with a highly variable risk depending on the nature and severity of the disease.

It is recommended that medical treatment be optimized to improve the functional status of the cardiac woman before considering conception.

Multidisciplinary collaboration involving an effective cardiologist, obstetrician, resuscitator, neonatologist, combined with advances in treatment and monitoring tools would reduce this risk and improve the maternal-fetal prognosis.

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