



# Valvular Heart Diseases and Pregnancy in Delivery Room at University Hospital Yalgado Ouedraogo

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## Abstract

Valvular heart diseases during pregnancy are complex with symptoms likely to affect patient's life quality, and endanger both mother's and child's life. Our survey aims at studying the combination of valvular heart diseases with pregnancy at University Hospital Yalgado Ouedraogo. This study was a cross-sectional study conducted from January 1<sup>st</sup>, 2015 to March 31<sup>st</sup>, 2016 in the delivery room of gynecology and obstetrics department. Inclusion criteria were: the presence of acquired and known valvular heart diseases followed-up or not; suspected valvular heart disease confirmed by a Doppler echocardiography and patient's consent to take part to the study. Twelve patients were involved in the study. The average age was  $27.5 \pm 3.9$  years (extremes of 21 and 34 years). The average gestational age at the delivery time was  $35 \pm 4.7$  weeks of amenorrhea with extremes reaching 25 and 39 weeks. None of the study patients were previously followed-up and treated for valvular heart diseases before pregnancy. Mitral disease was found among four patients. Seven cases had vaginal delivery. Two cases of spontaneous abortion were observed. We had seven hypotrophy newborns with an average weight of 2360 g at birth. Two patients suffering from congestive heart failure with a full type arrhythmia by atrial fibrillation were hospitalized in cardiology department. No death was reported during our study. Rheumatic valvular diseases are common among pregnant women. The cardiologist should plan pregnancies of patients suffering from valvular heart diseases. Treatment of those patients goes through the prevention of acute rheumatoid arthritis including a joint collaboration between cardiologists and gynecologists.

## Subject Areas

Cardiology

## Keywords

Valvular Heart Disease, Pregnancy, Delivery, Burkina Faso

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## 1. Introduction

Valvular heart diseases are characterized by the presence of acquired or congenital heart valves damage. They are all conveyed by strictures and/or valvular insufficiencies. These are frequent heart diseases occurring in developing countries and hitting young patients among which women of childbearing age. During pregnancy, several hemodynamic changes can be observed to the parturient. These changes without consequences on a healthy heart can unbalance an already precarious cardiac function to these women parturient according to the underlying cardiovascular affection [1]. Valvular diseases during pregnancy are complex diseases with symptoms likely to affect women parturient life quality and threaten the lives of both mother and child. In sub-Saharan Africa, only hospital data are available [2]. In Burkina Faso, no studies about valvular diseases during pregnancy have been conducted. Our study aims at investigating the linkage of valvular heart diseases and pregnancy in practical terms, through epidemiological aspects, treatment devices and the life of our parturient and newborns.

## 2. Methodology

This dealt with a cross-sectional study carried out within the delivery room of the obstetrics and gynecology department of the University Hospital “Yalgado Ouedraogo” from January 1<sup>st</sup>, 2015 to March 31<sup>st</sup>, 2016 corresponding to a 15-month period.

Inclusion criteria was: presence of an acquired valvular heart disease followed-up or not; suspected valvular disease confirmed by Doppler echocardiography and patient’s consent in taking part to the study.

Valvular heart diseases diagnosis and causes were confirmed through clinical and echocardiographic arguments. The diagnosis of infectious endocarditis has been selected from the criteria of Dukes [3]. The diagnosis of acute rheumatoid arthritis has been selected from the criteria of Jones [4].

The medical records of pregnancy, obstetrical ultrasounds and biological tests have been used for this study. The patient’s record in gynecology has been used as well.

Data collection included the following: the discovery mode of the valvular heart disease, the type of valvular heart disease with its etiology, pregnancy term, possible complications as well as treatments methods and the course after delivery for both mother and newborn.

Data were reviewed through the French version of the software Epi-info 3.5.3.

Data confidentiality was considering when collecting data, and data anonymity has

been respected. The local ethical committee was approved this study.

### 3. Results

Twelve patients were involved in the study. The average age of our patients was  $27.5 \pm 3.9$  years with extremes of 21 years to 34 years. **Table 1** shows the distribution of patients according to age range.

Gestational age at delivery was estimated at  $35 \pm 4.7$  weeks of amenorrhea with extremes of 25 and 39 weeks. **Table 2** shows the distribution of patients according to the gestational age. Seven female patients (out of 12) did not have fixed incomes and five patients had never been enrolled to school. As of geographical origin or provenance, eight patients came from urban places.

None of the patients have been already followed-up for valvular heart diseases before pregnancy. Dyspnea was the main reason of consultation (ten cases) and two patients was discovered fortuitously. **Table 3** shows the distribution of patients according to reason of consultation. Eleven patients had no contraceptive methods in the two years preceding their pregnancy.

There were four cases of mitral disease. **Table 4** shows the distribution of patients according to valvular affections. Acute rheumatoid arthritis was the cause of valvular diseases among 91.7% of cases (corresponding to 11 patients). Infective endocarditis was observed (for one patient) as the etiology of valvular disease.

Seven patients had vaginal delivery against three who had a caesarean birth. Two spontaneous abortions have occurred. Seven newborns were hypotrophy with an average birth weight estimated at 2360 g.

Two patients suffering from congestive heart failure with a full type arrhythmia by atrial fibrillation were hospitalized in cardiology department. No patient received valvular surgery during our survey.

No patient deaths have occurred throughout our study.

**Table 1.** Distribution of patients according to age range.

	Frequency	Percentage (%)
≤25 years	04	33.3
25 - 30 years	03	25.0
≥30 years	05	41.7
Total	12	100

**Table 2.** Distribution of patients according to the gestational age.

	Frequency	Percentage (%)
First trimester	00	00
Second trimester	03	25.0
Third trimester	09	75.0
Total	12	100

**Table 3.** The distribution of patients according to reason of consultation.

	Frequency	Percentage (%)
Dyspnea	10	83.3
Hepatalgia	04	33.3
Dry cough	05	41.7
Lower limb oedema	08	66.7
Fortuitous	02	16.7
Total	12	100

**Table 4.** Distribution of patients according to valvular affections.

	Valvular disease type	Frequency	Percentage (%)
<i>Monovalvular</i>	Mitral stenosis	03	25.0
	Mitral insufficiency	02	1.7
	Mitral disease	04	33.3
	Aortic insufficiency	01	08.3
<i>Polyvalvular</i>	Mitral insufficiency + Aortic insufficiency	02	16.7
<i>Total</i>		12	100

#### 4. Discussion

Our patients' average was  $27.5 \pm 3.9$  years, corresponding to the reproductive age. This is consistent with the literature data: 26 years [5],  $27.79 \pm 2.99$  in Egypt [6]; this age is slightly higher in France:  $29.2 \pm 5.5$  years [7].

The first prenatal visit is conducted on the outskirts in the absence of a cardiologist. Moreover, 11 patients out of 12 had no contraceptive methods in the two years preceding their pregnancy; therefore, pregnancy among patients suffering from valvular heart diseases is not planned in consultation with the cardiologist. Indeed, none of our patients was followed-up by a cardiologist.

The medium-term of pregnancy being estimated at  $35.5 \pm 4.7$  weeks of amenorrhea shows that most deliveries occur prematurely. Besides, this is the period when physiological changes are very significant particularly with an increase in blood volume expansion responsible for defusing the heart pump. This would cause the decompensation of the valvular disease and therefore give the discovery mode. The average birth weight was 2360 g with seven newborns with growth retardation. This feature is observed by Belhani [8] in Tunisia and Al-Lawati to Oman [9]. In most cases, it can also be due to a precarious nutritional status within our context of and premature delivery of newborns.

None of the patients were known as suffering from valvular heart diseases. This is due to the lack of support program meant for valvular heart diseases and fight against acute rheumatoid arthritis, which leads to a late diagnosis of these diseases reaching the complicated phase. Early diagnosis and appropriate monitoring would avoid complica-

tions for both mothers and newborns by correctly planning pregnancies.

The post-operative period is punctuated with cardiovascular complications among patients suffering from valvular diseases along with heart failure. The risk of the appearance of major cardiovascular factors is about 5% higher in case of tight mitral stenosis with a mitral area below 1.5 cm<sup>2</sup> while it is below 1% in mitral stenosis with less symptoms [10].

Two of our patients underwent a caesarean because of congestive heart failure with a type full arrhythmia with atrial fibrillation and were hospitalized in cardiology department. As for the patients presenting dyspnea rated stage III from the New York Heart Association, this risk has increased up to 7% [11]; symptoms such as heart failure among our patients is a formal indication for caesarean [12]. Several security measures should be taken during the post-operative care [13]. These imply increasing the preload of the left ventricle, fighting against tachycardia, arrhythmias, and hypovolemia; and the rapid correction of hypoxia, hypercapnia, not to aggravate latent pulmonary hypertension [14]. These actions were undertaken for two patients and their post-operative course was uneventful.

No patient in our study has received any valve repair surgery because this is not yet performed in Burkina Faso. These patients have received a treatment based on diuretics and converted enzyme inhibitors which hinders the nutritional care of newborns within our context.

This study limits is our number of patients. So, it's difficult to conclude of a good prognostic of valvular diseases associated to pregnancy. Further studies are important with inclusion or more patients to evaluate the prognostic.

## 5. Conclusion

Rheumatic valvular heart disease is common among pregnant women. It is the cause of the deterioration of women parturient life quality and is life-threatening to both mother and child. The cardiologist should plan pregnancy among patients suffering from valvular diseases. Treatment of patients includes preventing acute rheumatoid arthritis along with a joint follow-up from gynecologists and cardiologists.

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