

Arterial Hypertension and Pregnancy about 72 Cases

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Abstract

Background: Hypertension is the leading cause of cardiovascular disease worldwide. Hypertensive disorders in pregnancy also constitute a major global health threat. There are different types of hypertension that can occur during pregnancy; with different mechanisms and consequences for mother and fetus. **Objectives:** To determine the frequency of hypertension (hypertension) during pregnancy. Document the risk factors for pregnancy-related hypertension. Review the material and fetal complications which determine the prognosis. **Methods and Patients:** This was a retrospective cross-sectional study from January 1 to June 30, 2022 in the Obstetrics and Gynecology Department of the Brazzaville Hospital and University Center. We noted 72 cases of hypertension among 1188 births admitted during the reference period. Hypertension was defined as blood pressure 40/90mmHg. **Results:** Hypertension was observed in 6% of those giving birth. The average age of the patients was 28 ± 8 years (range 15 to 39 years). The age group of 15 to 34 years was the most affected, 56 cases (778%). The risk factors were young age (15 - 34 years), late transfer of women in labor, 49 cases (68%). Primiparity, 33 cases (45.8%), absence of prenatal consultation, 7 cases (9.7%), hypertension, 8 cases (11%), twinning, 4 cases (5%), fetal macrosomia, one case (1.3%). Maternal complications recorded were: 21 cases of eclampsia (29%), 6 cases of left ventricular failure (8.3%), 5 cases of anemia (6.9%), 2 cases of retroplacental hematoma (2.8%), 1 case of HELLP syndrome, as much renal failure. Fetal and neonatal complications were 23 cases of prematurity (32%), 10 cases of acute fetal distress (14%), 4 cases of hypotrophy (5.6%). Eleven cases of death (15.3%) were: 3 in utero. B in the neonatal period.

Keywords

Hypertension, Pregnancy, Pre-Eclampsia, Complications

1. Introduction

High blood pressure (hypertension) is already a major public health problem in itself. It is responsible for more than ten million deaths worldwide [1]. Its association with pregnancy considerably amplifies the problems. Indeed, this situation, observed in 5% to 10% of women worldwide [2], is life threatening for the mother and the fetus. The manifestations and implications of hypertension in pregnancy are multiple, each of which is linked to specific care and prognosis for the mother and baby. This pathology causes 30% of maternal deaths and 20% of fetal and neonatal deaths [3]. We therefore understand the importance given to this subject in the literature. Furthermore, the mortality of pregnant women with high blood pressure is much higher than that of pregnant women with normal blood pressure [4]. In Europe, the frequency of the association of high blood pressure and pregnancy varies according to studies. In France, it is between 5% and 15% [5] [6]. In the United States between 6% and 10% [5] [7].

The situation in sub-Saharan Africa is worrying (5). Indeed, several studies reveal a clear progression of this condition: in Senegal, its frequency is 3.9% [3], in Ivory Coast it is 8.4%, in Togo 12.3% [9] and in Guinea it is 17.05% [10].

In Congo, in the department of cardiology B and internal medicine, in complicity with the obstetrics and gynecology department of the Brazzaville University Hospital, we understood the importance of this subject, which led us to undertake this work with the aim of assessing the frequency of hypertension during pregnancy and evaluate the feto-maternal prognosis of this condition.

2. Patients and Method

This was a retrospective cross-sectional study of cases of hypertension with pregnancy carried out in the gynecology department of the Brazzaville University Hospital, between January 1 and June 30, 2022.

Patients were monitored in the obstetrics-gynecology and cardiology B departments.

Our study's population was constituted by all women who have consulted during the period of study. It was a non-probability sample with total inclusion.

In all patients, we looked for the main risk factors for hypertension during pregnancy: socio-economic level, parity, familial hypertension, personal hypertension, diabetes and obesity. The variables of studied were age, sex, matrimonial status, professional status, lifestyle status, number of partitions, hypertension, familial antecedent of hypertension, diabetes and obesity, delay of consultation, prenatal consultations, systolic blood pressure, diastolic blood pressure, and complications such as hemorrhage during partition, HELLP syndrome, retroplacental hematoma, eclampsia, renal failure, prematurity, fetal macrosomia, hypotonia, acute fetal distress and death.

Blood pressure (BP) was checked in women in left lateral decubitus position, or in a seated position on each arm supported at heart level in a calm environ-

ment after 15 minutes of rest using a manual blood pressure monitor.

The nosological entities of hypertension were defined according to the classification of the American College of Obstetricians and Gynecologists (14): We spoke of pre-eclampsia when this hypertension occurred after the 20th week of amenorrhea (AS) associated with proteinuria > 300 mg/24h. Chronic hypertension was defined as hypertension existing before pregnancy or appearing before the 20th week without proteinuria, with added pre-eclampsia when chronic hypertension was associated with proteinuria > 300 mg/24h from the third trimester. Pregnancy-related hypertension was defined as hypertension discovered after the 20th week, without proteinuria, in a woman who previously had a normal blood pressure before pregnancy, whose blood pressure returned to normal within six weeks after delivery. Hypertension was moderate when BP was 140-159/90-109 mmHg and severe when it was $\geq 160/110$ mmHg. Obesity was defined by a body mass index (BMI) ≥ 30 kg /m² before pregnancy (9).

The inclusion criteria: the files meeting the criteria of concomitant existence of pregnancy and hypertension with a systolic blood pressure (SBP) ≥ 140 mmHg and a diastolic blood pressure (DBP) ≥ 90 mmHg, according to the standards of the International Society for the Study of Hypertension in Pregnancy (ISSHP) and the Joint National Committee (JNC) VII: BP $\geq 140/90$ mmHg during two different measurements, taken four hours apart (9).

The data collected were analyzed with Epi-info version 6.04 software. The difference between the variables was assessed using the chi-square test with a significance threshold set at 0.05.

3. Results

3.1. Epidemiological Data

During the above-mentioned period there were 1188 parturients, 72 of whom presented with hypertension. The hospital prevalence of hypertension with pregnancy was 6%. There was an incidence of 12 cases per month. The average age of the patients was 28 + 8 years (range 15 and 39 years). There were 37.5% women under 25 years old. Four out of 5 women were under 35 years old. Parturients came from public hospitals in Brazzaville (32 cases, 44.4%) from medical offices (10 cases, 14%) or directly from home (30 cases, 41.6%).

The monitoring of the pregnancy, assessed from the number of prenatal consultations (ANC), was established as follows, which is indicated in **Table 1(a)**.

The risk factors for the association of hypertension and pregnancy identified in the series were: low socio-economic level, 45 cases (62.5%), primiparity, 33 cases (45.8%), age < 35 years, 57 cases (79.2%), family history of hypertension, 8 cases (11.1%), twinning, 4 cases (4.5%), fetal macrosomia, 3 cases (4.2%), and diabetes mellitus, 1 case (1.4%). No cases of obesity have been reported.

The distribution of patients according to parity (P) gave the results reported in **Table 1(b)**.

3.2. Clinical and Paraclinical Aspects

1) Blood pressure level

Taking into account the National Committee criteria (7), we had to classify our cases according to the level of blood pressure: hypertension was moderate in 23.6% and severe in 76.4%.

2) Clinical symptoms

The main clinical signs noted in 72 patients appear in **Table 2**. The main clinical signs noted in 72 patients appear like that: 52.7% of cases of edema, 29.9% of headache, 29.2% of convulsions, 19.4% of vertigo, 16.7% of palpitations, 14 of coma, 8.3% of left ventricular failure and 1.4% of agitations.

The systolic blood pressure was superior to 160 mmHg to 55 women (76.4%)

Table 1. (a) Stratification of cases according to the number of prenatal consultations (ANC); (b) Stratification of cases according to parity (P).

(a)		
prenatal consultations	n	%
≥4	52	72.2
2 - 3	12	16.7
1	1	1.4
0	7	9.7
Total	72	100
(b)		
Parity	n	%
P1*	33	45.8
P2	25	34.7
P3	14	19.5
Total	72	100

*Primiparity

Table 2. Clinical signs.

Clinical signs	n	%
Edema (affronter et upper limb)	38	52.7
Headaches	21	29.9
Convulsions	21	29.2
Vertigo	14	19.4
Palpitations	12	16.7
Coma	5	14
Signs of left ventricular fealure	6	8.3
Agitations	1	1.4

and between 140 - 159 mmHg to 17 cases (23.6%). The diastolic blood pressure was superior to 110 mmHg to 42 women (58.3%), between 100 - 105 mmHg to 17 women (23.7%) and 90 - 95 mmHg to 13 cases (18%).

3) Paraclinical data

We have notified proteinuria in 52%. One case of elevation of transaminases and uricemia. About ultrasound, in obstetric we had twin pregnancy in 10%, fetal hypotrophy in 10% and fetal death in utero in 7.5%. In maternal echocardiography we had hypertrophic cardiomyopathy in 2% of cases.

We observed 6% of left ventricular hypertrophy in chest x-ray and 2.8% of systolic left ventricular hypertrophy in electrocardiogram.

We have recorded in **Table 3** the results of the paraclinical examinations which had to be carried out.

3.3. Evolutionary Aspects

Treatment was based on anxiolytics, central antihypertensives (clonidine or alpramethyldopa), calcium channel blockers (nicardipine), beta-blockers and diuretics (furosemide) if pulmonary edema. The decision to extract the fetus via the upper route took into account the feto-maternal risks as indicated below.

1) Outcome of pregnancy

There were 52 deliveries (72.2%) by vaginal delivery and 20 (27.8) by cesarean section. This was motivated by the state of pre-eclampsia (9 cases) or eclampsia (11 CASES).

2) Complications

Maternal complications of hypertension are reported in **Table 4**.

Pre-eclampsia was more common in 52.7% of cases.

Chronic hypertension represented 14%, and was mainly found in multiparous women.

The development of the fetus was burdened by several complications reported in **Table 5**.

Table 3. Results of paraclinical examinations carried out.

Exams	Résultats	n	%
Biochemistry	Protéinuria present	38	52
	Elevation of ASAT and ALAT	1	-
	Hyperuricemia		
Obstetric ultrasound	Fetal death in utero	3	7.5
	Fetal hypotrophy	4	5.5
	Twin pregnancy	4	10.0
Echocardiography	Hypertrophic cardiomyopathy	2.8	2
Chest x-ray	Left ventricular hypertrophy	8.3	6
Electrocardiogram (n = 2)	Systolic left ventricular hypertrophy	2	2.8

ALAT: alanine aminotransferase; ASAT: aspartate aminotransferase.

Table 4. Maternal complications.

Main complications	n	%
Eclampsia	26	36.1
Superimposed preeclampsia	8	11.1
Voluntary terminaison of pregnancy	6	8.3
Left ventricular failure	6	8.3
Anemia	5	7
Retroplacental hematoma	2	1.4
Stroke	1	1.4
HELLP* syndrome	1	1.4
Acute renal failure	1	1.4

*Hemolysis elevated liver enzymes, Low patelets.

Table 5. Fetal complications.

Main compications (n = 76)	n	%
Prematurity	23	30.26
Felal distress,acute	10	13.15
Neonatal death	8	10.5
Hypotrophy	4	5.2
Death in utero	3	4.0
Polyhydramnios	1	1.31
Macrosomia	3	4

4. Discussion

The hospital frequency of hypertension during pregnancy in our series was 6%. In the literature, it varies widely depending on the authors. In France, it is between 5% and 15% [5] [11]. In the United States between 6% and 10% [4] [5]. This frequency of 6% in our series was higher than that of Senegal: 3.9% [3], close to that of Mali: 7.8% [7], lower than those reported in Cameroon: 8.2% [8], and Niger: 8.9% [9]. This difference is explained by the small size of our sample. On the other hand, the incidence of arterial hypertension during pregnancy in sub-Saharan Africa is probably close those of the United States and Europe. This is explained by the emergence of risk factors for hypertension linked to the change in lifestyle which is becoming Western, notably stress, excessive salt consumption, fatty foods and alcohol consumption. Furthermore, poverty constitutes a real problem because it limits access to medical care [7].

The association of hypertension and pregnancy is often metted in young women. In this series, one in 3 women under 25, 4 in 5 women under 35, one in 3 women under 25, 4 in 5 women under 35. Primigests (45.8%) were among the

most represented. The same trend was reported in other studies: 42.2% [9], 54.62% [12] and 41.34% [8] of primigravidas. Also, other risk factors were dominated by: age \leq 35 years of age (79.2%), housework (housewives) 55.5%, family history of hypertension (11.1%), and twinning (4.5%). Some of these factors have been reported in the literature [2] [13]. However, housework exposes women to intense physical activity, this observation is reported in certain African series [5] [8] [9] [14] [15].

The most represented type of hypertension was severe hypertension (58.3%), this trend corroborates data from the African literature: in Mali (58.46%), Togo (56.4%) and Senegal (50%).

Among the nosological entities, pre-eclampsia was the most represented (52.7%). Also several African studies have reported this observation: 44% [9], 47% [3], 56.4% (2), 47%, 66.37% [9] and 77.8% [8] of cases of pre-eclampsia. The predominance of this type of hypertension in our countries could be explained by an early sexual life and its corollary of pregnancy during adolescence. On the other hand, in Europe the frequency of pre-eclampsia is low, it varies from 1% - 5% [4] [6]. This frequency can reach 20% - 40% in women suffering from chronic hypertension or even moderate kidney damage such as diabetic nephropathy [16] [17]

Maternal and fetal complications are more frequent and severe when hypertension is early and severe. The number of complications appears impressively in our series. Also fifty women presented complications including Eclampsia which alone represented 36.1% of cases. They affected first-time mothers 4 times more. The literature data remains variable [3] [9], but recognizes primiparity as a major risk factor. Eclampsia is rare in Europe, with an incidence of 1.5 to 3 per 10,000 pregnancies [3] [5]. Other events observed such as in utero termination of pregnancy, acute left ventricular failure, retroplacental hematoma or the exceptional HELLP syndrome are serious, of course, but less frequent. On the other hand, in a Cameroonian series, retroplacental hematoma was the major complication with 5.76% [17]. No case of death was reported in our series, which is contrary to certain African series [3] [9]. However, in certain series in developed countries, maternal deaths are almost zero [4]. In this work, the evolution of the fetus is punctuated by 50 complications among the 76 fetuses, attributable to eclampsia, these complications are dominated by prematurity (30.26%). This is considered responsible for fetal suffering (13.1% of cases) and neonatal deaths (10.5%).

The evolution of pregnancy-related hypertension is ultimately unpredictable and variable. Generally, however, the gravid form and its complications like it pre-eclampsia or eclampsia disappears upon delivery. The prognosis of the newborn depends on the degree of premature hypotrophy or the existence of signs of fetal distress and hypotrophy [15].

The treatment of hypertension and pregnancy relies more on lifestyle and dietary measures, anxiolytics and pharmacological treatment. This is basically re-

duced to the administration of calcium channel blockers, central antihypertensives and beta-blockers. To prevent pre-eclampsia, the use of an antiplatelet agent, generally aspirin, is recommended. However, major events, notably the threat of eclampsia, require the termination of the pregnancy. This was our treatment strategy in our series, where one in four parturients gave birth by cesarean section.

Limit of the study: small sample size and weak paraclinical results. Despite these limitations, this study allowed us to obtain results comparable to other studies.

5. Conclusion

It is possible to carry parturients suffering from high blood pressure safely to term. Monitoring pregnancies, particularly among first-time mothers, allows early detection of high blood pressure levels and the detection of proteinuria which indicates pre-eclampsia. Therapeutic measures are then taken with complete peace of mind. The appearance of convulsions signals the onset of eclampsia, a major complication with a poor prognosis for both the mother and the fetuses. It implies the immediate interruption of the pregnancy.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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