

Review Article

High Blood Pressure in the Birth Room: Epidemiology and Outcome of Pregnancies at the General Hospital of Loandjili (Pointe-Noire, Congo)

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To cite this article:

Eouani Levy Max Emery, Buambo Gauthier Régis Jostin, Mokoko Jules Cesar, Itoua Clotaire, Potokoue Mpia Sekangue Samantha Nuelly, Kombo Boukaka Davy, Iloki Léon Hervé. High Blood Pressure in the Birth Room: Epidemiology and Outcome of Pregnancies at the General Hospital of Loandjili (Pointe-Noire, Congo). *Journal of Gynecology and Obstetrics*. Vol. 8, No. 3, 2020, pp. 62-66. doi: 10.11648/j.jgo.20200803.13

Received: April 10, 2020; **Accepted:** April 27, 2020; **Published:** May 12, 2020

Abstract: Objective: According to the World Health Organization, blood pressure disorders of pregnancy constitute a real public health problem of worldwide scope. It is an important factor of gravity, provider of a high maternal and perinatal morbidity and mortality in our maternities. The aim of this work is to study the epidemiological profile of pregnant women with hypertension and the outcome of their pregnancy. Methods: Descriptive cross-sectional study, carried out from January 1 to December 31, 2019, in the birthing block of the Obstetrics Gynecology service of the Loandjili General Hospital in Pointe-Noire, having included exhaustively and consecutively, all of them having given birth high blood pressure from a theoretical or ultrasound term of at least 22 weeks of amenorrhea or a birth weight of at least 500 g according to the WHO. New-borns of hypertensive mothers were also considered. The variables studied were socio-demographic, reproductive, linked to monitoring of pregnancy, clinical, relating to childbirth and maternal and perinatal prognosis. Results: Eighty and fourteen hypertensive pregnancies were recorded among 1677 admitted to the birthing room, a frequency of 5.6%. They were of a median age of 33, predominantly employed (60%), multigest (69%) and multiparous (44%). They were the most referred (66%) and admitted for high blood pressure or its complications in more than three quarters of cases (78%). Delivery was premature in more than half of the cases (54%), either spontaneously or induced. In this context, caesarean section was the preferred delivery route (77% of cases), performed urgently (94.4%) for severe maternal morbidity. Indications for emergency caesarean section were dominated by severe preeclampsia (67%), retroplacental hematoma (14%) and eclampsia (11%). One case of maternal death has been noted. Stillbirth was noted in 5% of cases (n=5). Neonatal morbidity was represented by poor adaptation to ectopic life (n=24 or 27%), hypotrophy (n=3 or 14%), prematurity (n=19 or 20%), neonatal resuscitation (n=24 or 27%) and the transfer to neonatology (n=45 or 48%). Conclusion: The association of high blood pressure and pregnancy remains frequent in our maternities. Given its high morbidity and mortality, it poses a real challenge for the obstetrician as to the outcome of pregnancies. The obstetrical prognosis and the improvement of the maternal and new-born prognosis go through the promotion of quality prenatal contacts and prevention.

Keywords: High Blood Pressure, Pregnancy, Epidemiology, Prognosis, Pointe-Noire, Congo

1. Introduction

Defined as diastolic blood pressure greater than or equal to 90 mmHg, whether associated with systolic blood pressure greater than or equal to 140 mmHg [1], hypertension during pregnancy remains common. According to the World Health Organization, blood pressure problems in pregnancy are a real public health problem of worldwide scope [1-3]. Hypertensive disorders of pregnancy constitute one of the leading causes of maternal and perinatal mortality worldwide. It has been estimated that high blood pressure complicates 2–8% of pregnancies globally including 2.4% in Congo [4-6]. In Latin America and the Caribbean, hypertensive disorders are responsible for almost 26% of maternal deaths, whereas in Africa and Asia they contribute to 9% of deaths. Although maternal mortality is much lower in high-income countries than in developing countries, 16% of maternal deaths can be attributed to hypertensive disorders [4, 7]. Indeed, hypertensive pregnancy disorders are the second leading cause of maternal death worldwide and the leading cause of perinatal morbidity and mortality [7].

Therefore, it remains an important factor of gravity, provider of high maternal and perinatal morbidity and mortality in our maternities. Thus, the present study set itself the objective of studying the epidemiological profile of pregnant women with hypertension and the outcome of their pregnancy.

2. Methods

This was a descriptive cross-sectional study, carried out from January 1 to December 31, 2019, in the delivery block of the Obstetrics Gynecology service of the Loandjili General Hospital in Pointe-Noire. We included exhaustively and consecutively, all women having presented hypertension from a theoretical or ultrasound term of at least 22 weeks of amenorrhea or a birth weight of at least 500 g depending on the WHO [1]. New-borns of hypertensive mothers were also considered. Hypertension has been defined by the WHO by measuring a diastolic blood pressure greater than or equal to 90 mmHg associated or not with a systolic blood pressure greater than or equal to 140 mmHg [1].

The variables studied were socio-demographic (age, professional activity, marital status, mode of admission), reproductive (pregnancy, parity), linked to monitoring of pregnancy (prenatal contacts), clinical (term of pregnancy, reasons for admission), relating to childbirth (route, type and indications of caesarean section) and maternal and perinatal prognosis.

The birth weights were projected onto the weight curve as a function of gestational age [8, 9] in order to assess the degree of percentile defining fetal growth. Thus, hypotrophy was defined by a birth weight lower than the 10th percentile compared to the gestational age.

Epi-Info 7.1 software was used for statistical analysis. Qualitative variables were represented as a proportion.

Quantitative variables, on the other hand, were represented as the mean and its standard deviation, or as the median and its quartiles (q1, q3).

3. Results

Pregnant women with hypertension represented 5.6% of admissions to the birth room, i.e. 94/1677. They were of a median age of 33 (26, 36) with extremes of 18 to 45. The other socio-demographic characteristics are shown in Table 1. Their pregnancy was followed in almost the most of cases (95%) with an average number of prenatal contacts of 5 ± 0.3 . They were mainly multigest (69%) and multiparous in almost half of the cases (44).

Table 1. Sociodemographic characteristics of mothers.

	N	%
Professional activities		
<i>Unemployed</i>	38	40
<i>Remunerative activities</i>	56	60
Educational level		
<i>Primary school</i>	14	15
<i>Middle school</i>	12	13
<i>High school</i>	38	40
<i>University</i>	30	32
Marital Status		
<i>Single</i>	48	51
<i>In a relationship with</i>	46	49

They were in two thirds of cases (66%) referred and admitted for hypertension or its complications in more than three quarters of cases (78%). In the remaining quarter, high blood pressure was diagnosed in the delivery room. In this context, childbirth was premature in more than half of the cases (Table 2), either spontaneously or induced.

Table 2. Reproductive and clinical characteristics of patients.

	N	%
Gesture		
Median (q1, q3)	4 (2, 5)	
Min – Max	1 – 8	
<i>1</i>	16	17
<i>2 – 3</i>	13	14
<i>4 – 8</i>	65	69
Parity		
Median (q1, q3)	2 (1, 4)	
Min – Max	1 – 6	
<i>1</i>	26	28
<i>2 – 3</i>	27	29
<i>4 – 6</i>	41	44
Term (AW ¹)		
<i>Extreme prematurity [22 – 28]</i>	7	7
<i>Great prematurity [28 – 34]</i>	12	13
<i>Middle prematurity [34 – 37]</i>	32	34
<i>Term [37 – 42]</i>	43	46
Admission		
<i>Mode</i>		

	N	%
Referred	62	66
Come from herself	32	34
<i>Reasons</i>		
High blood pressure and Complications	74	78
Other ²	20	22

¹AW: Amenorrhea weeks.
²Other: Pains, Metrorrhagia, Water loses.

Pregnant women gave birth more by caesarean section (n=72 or 77%). Caesarean section was performed in an emergency in 94.4% (n=68) either before entering labour (n=66), or during labour (n=2). In the remaining cases the caesarean was prophylactic. The indications for caesareans are reported in Table 3.

Table 3. *Cesarean indications.*

	N	%
<i>Emergency</i>		
<i>Before labour</i>		
Eclampsia	8	11
Retroplacental hematoma	10	14
Severe preeclampsia	48	67
<i>During labour</i>		
Acute fetal asphyxia	2	3
<i>Prophylactic</i>		
Macrosomia	2	3
Twice scar uterus	2	3

Emergency caesarean sections before entering labour represented maternal morbidity linked to high blood pressure. Among them, in the postpartum period, there was one case of stroke and one death in the context of acute lung oedema.

Stillbirth represented 5% of cases (n=5). The new-borns were resuscitated in 27% of cases and transferred to neonatology in almost half of the cases (48%) for low birth weight and prematurity (n=21) and poor neonatal status (n=24). The neonatal characteristics are shown in Table 4. Figure 1 shows the point cloud of birth weights relative to term. Death in neonatology represented 9% of cases.

Table 4. *Characteristic of the newborn.*

	N	%
<i>State at birth</i>		
Alive	89	95
Dead	5	5
<i>Apgar score in the 1st minute</i>		
[0-3]	13	14,6
[4-6]	11	12,4
[7-10]	65	73
<i>Weight (percentile)</i>		
> 90 th	9	9,5
10 and 90 th	72	76,5
< 10 th	13	14
Resuscitation	24	27
Neonatology transfer	45	48

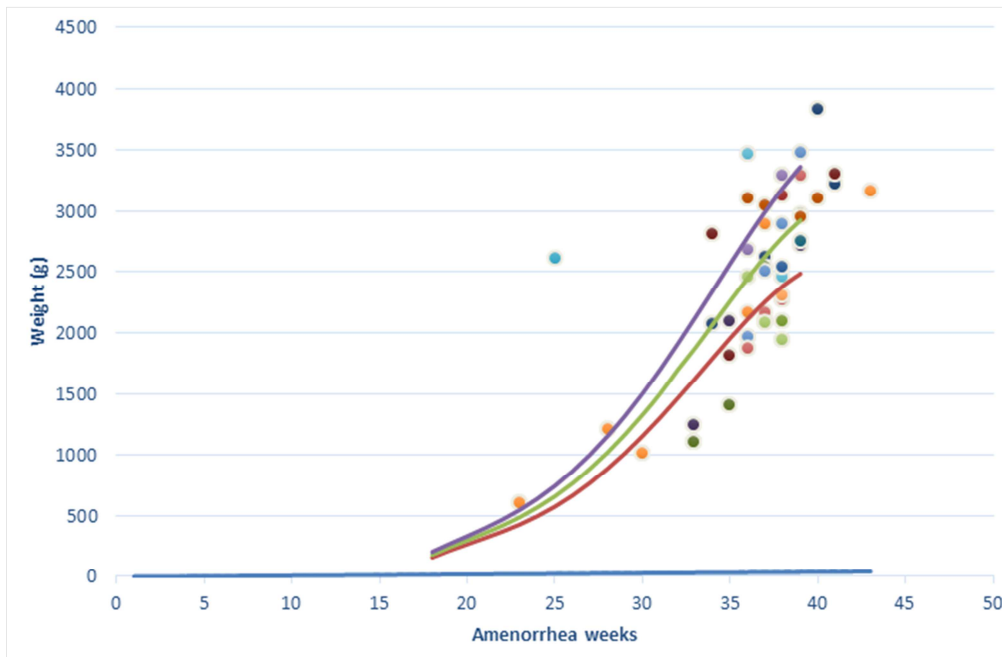


Figure 1. *Birth weight compared to term.*

4. Discussion

Although twice as high as that reported in Brazzaville by Itoua [6] and far below the 8.2% observed in the Cameroonian series [10], the frequency of high blood pressure in pregnant women in our series remains in the limits of that found in the literature, varying between 2 and 8% [4-6]. Its distribution

among pregnant women is uneven, observing a predominance of young adult patients close to their thirties, multiparous and admitted indirectly in an emergency context. As reported by Tshabu-Aguemon in Benin, an average age of mothers of 26.4 +/- 6.3 years (16 - 40 years), out of school and mainly referred in three quarters of cases [11]. This profile almost found in African series can be explained on the one hand by

socio-cultural similarities and on the other by overlapping difficulties relating to the organization of the health system. In addition, the early onset of arterial hypertension before 28 weeks of amenorrhea, contributed as to Brazzaville [6], to a high maternal morbidity dominated by severe preeclampsia with repercussions on fetal growth, hematoma retroplacental and eclampsia. Similar observations have been reported in the Benin series in different proportions. The authors noted the predominance of eclampsia and retroplacental hematoma in 36.8% and 7.4% of cases, respectively; this more significantly ($p < 0.05$) in pregnant women referred [11]. Hypertensive disorders of pregnancy are associated with high maternal morbidity and are responsible for a cardiovascular risk. Thus, according to the data from the study by OLIE in France, chronic hypertension would increase the risk of pulmonary embolism (RR=2.5 [1.6-3.8]) and of cerebrovascular accident (RR=2.5 [1.4-4.3]) during pregnancy and postpartum (RR=1.7 [1.1-2.6] respectively, RR=4.0 [2.3-6.8]). Similarly, preeclampsia is associated with a significant increase in the risk of stroke during pregnancy (RR=2.1 [1.3-3.3]) [12].

This would explain the high proportion of emergency caesareans observed in the African series in comparison with the Western series where the caesareans would be more prophylactic due to the availability of predictive diagnostic means (uterine doppler) and monitoring (fetal dopplers, automated heart rate analysis fetal, biological assessment of high blood pressure). Also, the prevention of hypertensive disorders by early salicylotherapy would contribute to the reduction of severe and early forms in pregnant women with a vascular risk [1, 13]. Which could explain a higher proportion of vaginal deliveries than ours. Severe maternal hypertensive morbidity has been deleterious for new-borns. These, as in several other African series, were the most hypotrophic and premature with difficulty adapting to ectopic life, leading to a significant transfer to neonatology after resuscitation [14-16]. The risk of preterm birth of new-borns from hypertensive mothers is five times higher compared to those of non-hypertensive mothers (OR=4.8 [1.57-13.36]) [16]. In most cases, this is prematurity most often induced by fetal extraction for maternal rescue caesarean section or severe fetal morbidity. Thus, in more than half of the cases, the pregnant women of our series gave birth prematurely, explained by a maternal morbidity dominated by severe preeclampsia, retroplacental hematoma and eclampsia. Likewise, Boiro in France has reported perinatal morbidity predominated by prematurity, low birth weight, growth retardation, respiratory distress and perinatal asphyxia [17]. In the Congolese series, the authors note an excess risk of low birth weight multiplied by 5 in the event of blood pressure disorders (OR=5.5 [2.08 - 14.8]) [14].

Maternal and neonatal morbidity and mortality linked to high blood pressure during pregnancy, remains high in sub-Saharan Africa [5, 6, 10, 11, 14-16], despite the mobilization of comprehensive emergency obstetric and neonatal care (SONUC). Therefore, as noted in the literature, only quality essential obstetric care can significantly improve

this prognosis.

5. Conclusion

The association of high blood pressure and pregnancy remains frequent in our maternities. Given its high morbidity and mortality, it poses a real challenge for the obstetrician as to the outcome of pregnancies. The obstetrical prognosis and the improvement of the maternal and new-born prognosis go through the promotion of quality prenatal contacts and prevention.

Conflicts of Interest

All the authors do not have any possible conflicts of interest.

References

- [1] WHO, WHO Recommendation for the Prevention and Treatment of Pre-eclampsia and Eclampsia, World Health Organization, Geneva, Switzerland, 2011, https://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241548335/en/.
- [2] Mounier-Vehier C, Amar J, Boivin JM and al. Hypertension and Pregnancy: Expert Consensus Statement from the French Society of Hypertension, an Affiliate of the French Society of Cardiology. *Fundam Clin Pharmacol*. 2017; 31 (1): 83-103. doi: 10.1111/fcp.12254.
- [3] Feihl F, Waeber B, Pradervand P-A, Vial Y. Hypertension et Grossesse. *Rev Med Suisse* 2009; 5: 1758 – 62.
- [4] Steegers EA, von Dadelszen P, Duvekot JJ, Pijnenborg R. Pre-eclampsia. *Lancet* 2010; 376: 631–44. (Level III)
- [5] Touré I. A., Brah F., Prual A. Hypertension Artérielle et Grossesse au Niger: Etude cas /témoins à propos de 70 cas. *Med Afr Noire* 1997; 44 (4): 205-8.
- [6] Itoua C, Ngounda Monianga AS, Ellenga Mbolla BF et al. Hypertension Artérielle et Grossesse: Epidémiologie et Pronostic Materno-fœtal au Centre Hospitalier Universitaire de Brazzaville (Congo). *Med Afr Noire* 2013; 6001: 21-9.
- [7] Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet* 2006; 367: 1066–74. (Systematic Review)
- [8] Keen DV, Pearse RG. Weight, length, and head circumference curves for boys and girls of between 20- and 42-weeks' gestation. *Arch Dis Child* 1988; 63: 1170-2.
- [9] Mamelle N, Munoz F, Grandjean H pour le groupe de travail AUDIPOG. Croissance fœtale à parti de l'étude AUDIPOG. I. Établissement de courbes de références. *J Gynecol Obstet Biol Reprod* 1996; 25: 61-70.

- [10] Mboudou ET, Foumane P, Belley Priso E et al. Hypertension au cours de la Grossesse: Aspects Cliniques et Epidémiologiques à l'Hôpital Gynéco-Obstétrique et Pédiatrique de Yaoundé, Cameroun. *Clin Mother Child Health* 2009; 6 (2): 1087-93.
- [11] Tshabu-Aguemon C, Ogoudjobi OM, Lokossou Mègnissè Sèna HS et al. Facteurs Pronostiques de la Pre-Eclampsie Sévère à la Maternité Universitaire de Porto-Novo au Bénin. *Journal de la Société de Biologie Clinique du Bénin*, 2017; 27: 59-64.
- [12] Olié V, Moutengou E, Deneux-Tharoux C, Plu-Bureau G. Désordres Hypertensifs et Risque de Maladies Cardiovasculaires pendant la Grossesse et le Post-partum. *Rev Epidemiol Santé Publique* 2018; 66: 16-7.
- [13] Atallah A, Lecarpentier E, Goffinet F, Gaucherand P, Doret-Dion M, Tsatsaris V. Aspirin and Preeclampsia. *Presse Med* 2019; 48 (1): 34-45.
- [14] Mabaga JM, Mubinda PK, Mavuta CZ, Mukuku O, Kakudji PL, Luboya ON. Pronostic Périnatal aux Cliniques Universitaires de Lubumbashi. *Revue de l'Infirmier Congolais* 2017; 1 (1): 27-34.
- [15] Kyembwa M, Juakali KV, Katenga G, Manga P, Kakoma J. Risk Factors of Pre-eclampsia in Goma (Democratic Republic of the Congo). *Afr J Health Issues* 2018; 3: 12. doi: 10.26875/ajhi232018xii.
- [16] Thiam M, Goumbala M, Gning S. B, Fall P. D, Cellier C, Perret J. L. Maternal and Fetal Prognosis of the Higher Blood Pressure Association and Pregnancy in Sub-Saharan Africa (Senegal). *J Gynecol Obstet Biol Reprod* 2003; 32 (1): 35-8.
- [17] Boiro D, Faye PM, Gueye M and al. Preeclampsia: What Complications in the Newborn? *J Pediatr Pueric* 2018; 31 (6): 282-6.