

Eclampsia risk factors during pregnancy at donka national hospital maternity, university teaching hospital Conakry. Guinea

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Abstract

Objectives: The objectives of this work were to calculate the frequency of arterial hypertension during pregnancy, describe the epidemiological profile and identify risk factors for eclampsia.

Methodology: This was a prospective of six (6) month descriptive study carried out in the obstetrics gynecology Department of the Donka National Hospital a University Teaching Hospital (CH) in Conakry. The study took place from 1st to December 31st, 2018.

Results: The frequency of arterial hypertension during pregnancy was 8.82% in the department. The epidemiological profile was that of an adolescent (32.8%), nulliparous (56%), coming from home (69.2%), having not performed ANC (52%), not schooled (68%) and housewives. Primigestity was the main risk factor (52.4%). Gestational age greater than 37 weeks was the most affected (62%). The reasons for consultation are dominated by headache (76%) and dizziness (68%). The main type of hypertension was preeclampsia (48%) followed by transient hypertension (28%) The dominant clinical form when received was pre-eclampsia (47.2%) followed by eclampsia (23%). Eclampsia was the major complication (48%). We recorded 6 cases of death that is 2.4%. At the first minute, 35.68% of new-borns had an APGAR score below 7 and by the fifth 25.5% scored below 7.

Foetal morbidity was dominated by foetal hypotrophy (30.19%) followed by prematurity (23.92%). We recorded 30 cases of MFIU and 7 cases of neonatal death out of 255 births, ie 14.50%.

Conclusion: The detection of risk factors by a good prenatal follow-up and the regular training of care providers for an adequate and multidisciplinary management (obstetrician, nephrologist and pediatrician) of hypertensive pregnant women and their new-borns can improve the maternal prognosis and foetal.

Keywords: risk factors, eclampsia, pregnancy

Introduction

Arterial hypertension during pregnancy is defined as a systolic blood pressure greater than or equal to 140 mm / Hg and or a diastolic blood pressure greater than or equal to 90 mm / Hg during two (2) successive consultations separated by at least 4 hours with a resting woman for 10 to 15 minutes in a seated position then in the left lateral decubitus ^[1].

The WHO estimates that 150,000 pregnant women die each year worldwide from complications of hypertension in pregnancy, most often from an attack of eclampsia ^[2].

The frequency of high blood pressure during pregnancy varies from country to country; according to WHO, this a frequency that varies between 0.1% and 31.4% of pregnancies ^[2]. In developed countries ; it would be of the order of 9 to 15% of pregnancies: In France 10% ^[3]; United Kingdom 10.8% ^[4]; United States 10-15% ^[5]; China 9, 4% ^[6]. In sub-Saharan Africa we only have hospital statistics: Madagascar 11% ^[6]; Morocco 7, 94% ^[7]; Niger 7% ^[8]; Senegal 3.9% ^[9] and Côte d'Ivoire 4.6% ^[10].

In Guinea, this frequency varies from one hospital to another SAKOUVOGUI B found 10.35% at Kindia Regional Hospital ^[11] and KOUGANG N.E at Ignace Deen National Hospital found 8.97% ^[12].

The objectives of this work were to calculate the frequency

of high blood pressure during pregnancy, describe the epidemiological profile, identify the most common type of high blood pressure and establish the maternal and fetal prognosis.

Methodology

This was a prospective of six (6) month descriptive study carried out in the obstetric gynecology department of the Donka National University Teaching Hospital (CHU) in Conakry. The study took place from 1st to December 31st, 2018

- All pregnant women; parturients and postpartum women who were admitted to the department and having a blood pressure (BP) greater than or equal to 140 / 90mmHg during the study period were included.
- All pregnant; parturients and women following childbirth admitted to the department with an arterial pressure (BP) less than or equal to 139/89 mm / Hg during the study period (without any anti-hypertensive treatment) and also hypertensive women after partum were not included in the study.
- They were excluded from the study because all hypertensive patients who were not hospitalized during the study period and patients who lost to follow-up during our study period.

The variables studied were:

- Some quantitative: frequency, maternal age, parity, prenatal consultation gestational age and APGAR score.
- Others qualitative: mode of admission, level of education, socio-professional layers, type of arterial hypertension, period of discovery reasons for consultation, risk factors for eclampsia, clinical form on admission, maternal complications and fetal complications.

Findings

A. Frequency: During our study period, we recorded 250 hypertensive women out of a total of 2833 women who gave birth in the department, ie a frequency of 8.82%.

B. The epidemiological profile

1. **Maternal age:** The age group of 15-19 years, corresponding to adolescent girls, was the most concerned, ie 32.8%. The average age of our patients was 24 years with extremes of 15 to 43 years and a standard deviation equal to 7 years.
2. **Parity:** In our series, the nulliparas were the most numerous with 56%.
3. **Mode of admission:** patients coming from their homes were the most affected, ie 69.2%.
4. **Prenatal consultation:** Patients who did not perform ANC were the most numerous, ie 52%.
5. **Level of education:** In our study, 68% of our patients were out of school.
6. **Socio-professional groups:** Housewives were the most numerous, ie 44%.

C. Risk factors for eclampsia

- a. **Primigestity** was the main risk factor encountered, ie 52.4%.
- b. **Familial hypertension:** among the 80 patients in our series with a family history of hypertension, 50% had both hypertensive parents, 31.25% had hypertensive fathers, and 18.75% were from mothers with eclampsia.
- c. **Common life time with the spouse for less than 3 years:** during our study, 28% of our patients had a common life time with their spouse of less than 3 years.
- d. **Obesity** is a significant factor in the occurrence of arterial hypertension, we noted 5 cases, or 2%.
- e. **Taking estrogen-progestins:** in our study 8 women, or 3.2% used estrogen-progestins. Of these, 5 were previously known to have high blood pressure and became pregnant 6 to 7 months after stopping the pill.

D. Clinical Aspect

- a. **Gestational age:** In our study, patients whose gestational age was greater than or equal to 37 WA were the most concerned, ie 62%.
- b. **Reasons for consultation:** It emerges from our results that vertigo headaches were the most frequent reasons for consultation with 76% and 68% respectively.
- c. **Type of hypertension and period of discovery:** During our study, 120 cases of pre-eclampsia were obtained, ie 48%; 70 cases of transient hypertension, that is to say 28%; 40 cases of added pre-eclampsia, that is to say 16%; and 20 cases of chronic hypertension, that is to say 8%.
- d. **Clinical forms on admission:** The most frequent

clinical forms on admission were preeclampsia with 47.2%, followed by eclampsia 23.2%; and 12% HRP.

E. Prognosis Aspect

1. Maternal prognosis

- **Maternal complications:** Eclampsia was the most serious complication in our series with 48%.
- **Maternal lethality:** We recorded 6 cases of death, ie 2.4%. Eclampsia was the most formidable of the complications, responsible for 5 of the 6 deaths.

2. Fetal Prognosis

- **APGAR Score:** In our series; 35.68% of newborns had an APGAR score < 7 versus 64.31% for an APGAR score ≥ 7 at the 1st minute. By the 5th minute, 25.5% had an APGAR score <7 versus 74.5% for an APGAR score ≥ 7 .
- **Fetal morbidity:** In our series 83.52% of children born with hypertensive patients presented complications, among which we have: fetal hypotrophy (30.19%) and prematurity (23.92%).
- **Fetal lethality:** During our study, we recorded 30 cases of MFU and 7 cases of neonatal death out of 255 births, ie 14.50%. Among the 7 cases of neonatal death, 3 occurred early between D0 and D7 and 4 were late from D7 to D28.

Discussion

A. Frequency: During our study period, we recorded 250 hypertensive women out of a total of 2833 women who gave birth in the department, ie a frequency of 8.82%. This result is superimposable on that reported by KOUGANG N.E in conakry (guinea) that is 8.87% [12] and lower than that found by KAMANO S.P [13] in kissidougou (guinea) 11.14% in Guinea. On the other hand, it is higher than that found by DAO S.Z [14] in Mali 3.65%.

The high frequency in our study could be explained by not only the association of certain risk factors in the same patient such as multiparity, maternal age < 20 years, but also by the fact that Donka's maternity is a reference center for peripheral health centers and delivery centers in the city of Conakry. To this, it is added capacity to receive patients (it is the largest maternity hospital in the country).

B. The epidemiological profile

1. Maternal age: The age group of 15-19 years, corresponding to adolescent girls, was the most concerned, ie 32.8%. The average age of our patients was 24 years with extremes of 15 to 43 years and a standard deviation equal to 7 years.

This result is similar to those reported by KOUGANG. NE [12], KAMANO. SP [13] and SAKOUVOGUI B. [11] in the age group of 15-19 years, i.e. 35.6%, 36, 02% and respectively. 37.66%. The high frequency of this age group could be justified by early marriages and early sexual intercourse.

2. Parity: In our series, the nulliparas were the most numerous with 56%.

This result is similar to those reported in the African literature [14] and this same literature reports that the relationship between hypertension and nulliparity can be explained by the inadequacy of the maternal organism to the upheavals of pregnancy when this is a

young nulliparous, renal and placental hemodynamic disorders and uterine infantilism [17].

In addition, it seems that the black race constitutes a risk factor in the primipara and not the multipara with a relative risk of 12 compared to the white race for reasons not yet elucidated [11].

3. **Mode of admission at the hospital:** patients coming from their homes were the most affected, ie 69.2%. This result is close to that found by KOUKANG. NE in Guinea, ie 63.55% [14]. The high frequency in this series could be due to the poverty and ignorance of the latter because they note the changes taking place on their organism; but for financial reasons or not knowing the evolution of these signs, they stay at home and arrive in our centers only at the moment of complications.
4. **Prenatal consultation:** Patients who did not perform ANC were the most numerous, ie 52%. This result is superimposable on those found by SAKOVOGUI B in Guinea [11] and NGUNGA N. in Democratic Congo [18] that is respectively 51.65%, 53.33% and 57.9%
The good ANC does not protect the woman from hypertension, but makes it possible to detect in time and prevent complications, which is why nowadays we practice refocused ANC which consists in detecting and treating pathologies encountered. It should be noted that the last ANC is the last opportunity to screen for risk factors and initiate the necessary measures for a delivery under good conditions.
5. **Level of education:** In our study, 68% of our patients illiterate. This result is similar to those found by KOUKANG N.E [14] and KAMANO S.P [15], ie 64.8% and 65.12% respectively. The predominance of the out-of-school population could be explained by the fact that they are the most numerous in the general study population [14] and that the illiterate have less information on reproductive health, thus exposing them to a lack or poor prenatal follow-up which favors the occurrence of hypertension during pregnancy and its complications.
6. **Socio-professional group:** Housewives were the most numerous, ie 44%. KOUNKANG N.E [14] reports in his study a predominance among housewives, ie 39%. For BEAUFILS M. [1], it seems that a low socioeconomic level favors the onset of pregnancy hypertension through insufficient and unbalanced diet.

C. Risk factors for eclampsia

- a. **Primigestity** was the main risk factor encountered, ie 52.4%. This result is superimposable on those found by BAH AO in Guinea [17], and VANGEEDERHUYSEN *et al.* in NIGER [8] respectively 49.55% and 48.6%. According to the existing literature, hypertension during pregnancy is twice as frequent in primigravidae primiparas as in pauci pares and multiparas [3].
- b. **Familial hypertension:** among the 80 patients in our series with a family history of hypertension, 50% had both hypertensive parents, 31.25% had hypertensive fathers, and 18.75% were from mothers with eclampsia. Studies have shown that the frequency of hypertension during pregnancy that is 28% in women whose mothers suffered from toxemia of pregnancy compared to 13% in women whose mothers had normal pregnancies [8].
- c. **Joint life with their partner less than 3 years:** during our study, 28% of our patients had a joint life with their

partner of less than 3 years. It emerges from this result that the shorter the time for the couple's sexual cohabitation is, the higher the frequency of pre-eclampsia is, the same remark was noted by BAH AO *et al.* [17] and by Vangeenderhsen *et al.* in Niger in 2000 [8]. This result approximates the hypothesis that the risk of preeclampsia and eclampsia varies with the frequency and duration of maternal contact with sperm [15].

In fact, the immune tolerance of the maternal organism to trophoblastic antigens of paternal origin is based on the secretion by the mother of anti-body blockers. The production of these antibodies requires that the paternal antigens have been recognized, which seems to occur during repeated sexual intercourse, if this recognition has not been sufficient, the immune tolerance is poor and the trophoblastic invasion of the arteries of the myometre cannot be performed properly, resulting in placental ischemia [1].

d. **Obesity:** is a significant factor in the occurrence of arterial hypertension, we noted 5 Cases, that is 2%. This result is superimposable on the 2.19% reported by SAKOVOGUI B [11]. The authors [5, 6] are unanimous that the incidence of hypertension is higher in obese women.

e. **Taking estrogen progestins:** in our study 8 women, or 3.2% used estrogen progestins. Of these, 5 were previously known to have high blood pressure and became pregnant 6 to 7 months after stopping the pill. This type of pill has been shown to trigger hypertensive surges in women with previously hypertension [1].

D. Clinical Aspect

- a- **Gestational age:** In our study, patients whose gestational age was greater than or equal to 37 WA were the most concerned, ie 62%. This result is higher than that of Kougang NE, i.e. 55.08% in his patients whose gestational age was greater than or equal to 37 WA [14]. The high frequency of hypertension at this level could be explained by the poor quality of ANC that allows high BP or significant proteinuria to go unnoticed. In addition, the stress due to the work can be the origin of transient hypertension which increases the frequency of hypertension during pregnancy.
- b- **Reasons for consultation:** Our results show that headaches and dizziness were the most frequent reasons for consultation with 76% and 68% respectively. These results are similar to those of Kougang NE in whom, 73.72% of his patients had consulted for headaches and 64.4% for dizziness [14].
- c- **Type of hypertension and period of discovery:** During our study, 120 cases of pre-eclampsia were obtained, ie 48%; 70 cases of transient hypertension, or 28%; 40 cases of added pre-eclampsia, or 16%; and 20 cases of chronic hypertension, or 8%. These results are similar to those of KAMANO S.P. which obtained 48.84% of pre-eclampsia, 16.28% of added hypertension, and 20% of transient hypertension; Against 24.17% chronic hypertension [15]. Thiam M. *et al* found 47% pre-eclampsia, 19% added hypertension, 17% chronic hypertension, 17% transient hypertension [12].

E. Prognosis Aspect

1. Maternal prognosis

- **Maternal complications:** Eclampsia was the most serious complication in our series at 48%. This result is similar to that of KOUGANG NE, i.e. 58.82% for eclampsia ^[12]. On the other hand, it is superior to that of DAO SZ in Mali, who found eclampsia as the most frequent maternal complications. HRP with 19.2% and 18.3% of cases respectively ^[14]. The high rate of eclampsia could be explained by the fact that it is secondary to untreated preeclampsia.
 - **Maternal lethality:** We recorded 6 cases of death, ie 2.4%. Eclampsia was the most serious of the complications, responsible for 5 of the 6 deaths and eclampsia associated with ARI involved one patient. The high rate of maternal death from eclampsia is explained by the fact that it intervenes late and this after complications, but also the absence or poor ANC and especially the low level of education.
- ### 2. Fetal prognosis
- **APGAR Score:** In our series; 35.68% of new borns had an APGAR score <7 versus 64.31% for an APGAR score ≥7 at the 1st minute. By the 5th minute, 25.5% had an APGAR score <7 versus 74.5% for an APGAR score ≥7.
 - **Fetal morbidity:** In our series 83.52% of the children born to hypertensive patients presented complications among which we have: fetal hypotrophy 30.19% and prematurity 23.92%. This result on fetal hypotrophy is similar to those reported by KOUGANG NE ^[12] and DIALLO MH ^[18], i.e. 27.97% and 27.37% respectively and higher than the data in the literature according to which 7 to 20% of pregnancies with hypertension are complicated by fetal hypotrophy ^[19].
 - **Fetal lethality:** During our study, we recorded 30 cases of MFIU and 7 cases of neonatal death out of 255 births, ie 14.50%. This result is lower than those reported by KOUGANG N.E ^[12]; by KAMANO S.P ^[13]; by THIAM M and al. in Dakar ^[10] which found 22.03% respectively; 24.44% and 50%. Among the 7 cases of neonatal death, 3 occurred early between D0 and D7 and 4 were late from D7 to D28. These children to varying levels were exposed to immediate complications: Hypoglycemia, Hypothermia, infection by low resistance to microbial aggression most often accompanied by difficulty in feeding.

Conclusion

Detection of risk factors through good prenatal follow-up and regular training of care providers for adequate and multidisciplinary management (obstetrician, nephrologist, intensive care unit and pediatrician) of hypertensive pregnant women and their new borns can improve the maternal and fetal prognosis.

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