

The socio-clinical particularities of preeclampsia in a disadvantaged African black environment

Abstract

Introduction: Pre-eclampsia is one of the major causes of maternal and neonatal morbidity and mortality in the world. The complexity of its etiopathogenesis involves, among other things, age, primi-gravidity, obesity, lack of sensitization to the partner's sperm.

Objective: It was to describe the socio-clinical profile of the preeclampsia pregnant woman received in consultation in our service and to compare it with that of a control population.

Methodology: We carried out a situational study of prospective descriptive and analytical type during 07 months from 01 November 2018 to May 31, 2019, in the obstetrics and gynecology department of the Laquintine Hospital in Douala. We recruited in consultation a continuous series of 150 pregnant women including 50 preeclampsia that we matched to 100 non preeclampsia all at a gestational age greater than 20 weeks of amenorrhea. The variables of interest were age, pregnancy, parity, gestational age, marital status and body mass index. The statistical tests were considered significant for a value of $p < 0.05$.

Results: The preeclampsia pregnant woman in our series had a mean age of 27.80 ± 5.80 , mostly in the 25-30 years, pauci-gravid, nulliparous and obese grade 1 with a gestational age predominantly ≥ 37 weeks of amenorrhea. This profile was non-exposing and heterogeneous compared to the control group of the same racial strain and to data from the literature.

Conclusion: Our preliminary study suggests the existence of certain socio-clinical peculiarities in the preeclampsia pregnant woman in the black African environment.

Keywords: pre-eclampsia, black race, profile, motley

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Introduction

Pre-eclampsia is defined as the occurrence of arterial hypertension (HTN) associated with proteinuria after 20 weeks of amenorrhea in a previously normal pregnant woman¹ and occurs in 2 to 7% of pregnancies.² According to the WHO, it is one of the major causes of maternal and neonatal morbidity and mortality in the world (14%) and especially in developing countries.³ Its frequency in the world is estimated at 20% of hypertensive pregnant women⁴⁻⁷ and its lethality remains high in developed countries⁷⁻¹⁰ and even more in African series.¹¹ In France, it remains the second cause of maternal death after bleeding during delivery¹² with around 20 deaths per year.^{13,14}

In black Africa, its prevalence is around 25%.¹⁵ It affects one pregnancy in 2000 with 30% maternal deaths and 20% fetal and neonatal mortality.¹⁶ In Cameroon, it represents a main pathological entity in hypertensive diseases in pregnancy with 77.88% of hypertensive patients and a frequency of 4.97%.⁶

It is the third leading cause of maternal mortality, after postpartum hemorrhage and infections in Cameroon.^{4,17}

It is therefore a worrisome pathology due to its high prevalence and a severe form of pregnancy-induced hypertension which involves the short-term maternal and fetal prognosis and from which several risk factors and complications arise.

The data in the literature being mainly Western, we initiated this situational study to search for predictive factors inherent in the black race and thus participate in a better knowledge and management of this pathology in pregnancy in our environment.

Methodology

- Type of study, Period, Duration and Place of Study: This was a prospective, descriptive and analytical study carried out over 7 months, from November 01, 2018 to May 31, 2019 in the obstetrics and gynecology department of Laquintine hospital which is a 2nd category reference structure according to health stratification of Cameroon and which receives patients and pregnant women mainly from the suburbs of the city of Douala and often poor.
- Study population: It consisted of pre-eclampsia and non-preeclampsia pregnant women received during our study period.

Inclusion criteria

We included in our study pregnant women from our study population who gave their informed consent without distinction of age, pregnancy or parity.

Pre-eclampsia group

- Pregnant women with moderate or severe pre-eclampsia without distinction of gestational age.
- Non-preeclampsia group.
- Absence of pre-eclampsia.
- Gestational age greater than or equal to 20 weeks of amenorrhea.

Exclusion criteria

Were excluded from our study: Common exclusions: smoking,

chronic renal failure, chronic liver disease, blood cross disorders, treatment with anti-vitamin K.

Specific exclusions

Non-preeclampsia group: risk factors for preeclampsia (previous diabetes, chronic arterial hypertension, anti-phospholipid syndrome, lupus, history of preeclampsia), gestational hypertension.

Sampling: We carried out a sampling for convenience, consecutive and not exhaustive

Procedure

Administrative procedures: The study protocol had been approved by the Institutional Research Ethics Committee for Human Health of the University of Douala by issuing an ethics clearance N°1727 CEI-Udo/02/2019/T. The collection was carried out with respect for confidentiality by means of anonymous files. We also obtained permission from the director of Laquintinie Hospital.

Collection of data: After obtaining informed consent following the explanations relating to the study, the data were collected using a computerized and structured data sheet whose variables of interest were:

- A. Socio-demographic: Age, marital status (single, married,), gestational age in the week of amenorrhea, pregnancy and parity.
- B. Medical (History): Hypertension, diabetes, tobacco addiction, thromboembolic disease, pre-eclampsia, autoimmune disease, hematological conditions, chronic liver disease, chronic renal failure, anticoagulant use. The positivity or negativity of this history was made on the basis of documentation at the medical record level.
- C. Physical
 - a) Anthropometric and hemodynamic parameters:
 - i. Weight (kg): Were measured using a CAMRY brand scale (Hong Kong, China); the patient standing and barefoot, standing upright on the scale.
 - ii. Height (in cm) was measured with a measuring rod, the patient barefoot standing upright with his head horizontal.
 - iii. The Body Mass Index (in kg/m²) was obtained using the 2 previous measurements by Quételet's formula (the ratio of weight (in kg) to the square of the height (in m). Interpretation were as follows: Normal weight (18.5-24.9), overweight (25-29.9), Obesity grade 1 (30-34.9), Obesity grade 2 (35-39.9), Morbid obesity (≥40).
 - iv. Blood pressure (in mm hg): after 10 minutes of rest, it was measured in both arms. This measurement was made using electronic blood pressure monitors from OMRON (Kyoto, Japan). Anyone with BP ≥140/90mm hg was considered hypertensive.
 - b) Urinary dipstick (for proteinuria testing): It was done using MISSION brand urine strips LOT no. URS8060151 only in non-preeclampsia patients. Proteinuria was said to be significant from two crosses.

Statistical analysis

The data collected was recorded, analyzed and entered using Epi Info 7, Excel 2013 and the EPI Data 3.1 software (Lauritzen, Denmark). Quantitative variables were grouped together as a mean

with standard deviation. Qualitative variables in the form of numbers and percentages. The comparison of the qualitative values was made using the Chi-square test and the quantitative variables using the Student test. The p-value was significant for a value less than 0.05.

Results

We approached 187 pregnant women, and retained 150 (Figure 1).

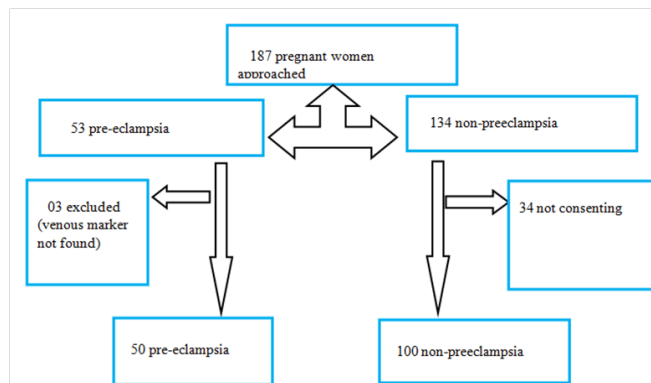


Figure 1 Process of recruiting study participants.

General characteristics of the study population

The ages varied from 16 to 40years old. The mean age of preeclampsia was 27.80±5.80 and 29.05±5.29 in non-preeclampsia patients without a statistically significant difference. Preeclampsia and non-preeclampsia drugs were more represented in the 25-30years age group, respectively 32% versus 37% without statistically significant difference. Singles were in majority in both groups, 68% in preeclampsia and 62% in non-preeclampsia patients without statistically significant difference (Table 1).

Table 1 Socio-demographic characteristics of our population

Variables	Pre-eclampsia N= 50 n (%)	Normal pregnant women N= 100 n (%)	P
Age (years)			
Mean±standard deviation	27.80±5.80	29.05±5.29	0.189
[15-20]	4 (8)	2 (2)	0.077
[20-25]	9 (18)	22 (22)	0.568
[25-30]	16 (32)	37 (37)	0.545
[30-35]	12 (24)	18 (18)	0.386
[35-40]	8 (16)	17 (17)	0.876
[40-45]	1 (2)	4 (4)	0.52
Marital status			
Single	34 (68)	66 (66)	0.806
Married	16 (32)	34 (34)	0.806

The mean gravidity was 2.66 ± 1.45 in the preeclampsia and 2.82±1.76 in the non-preeclampsia patients without a statistically significant difference, with the extremes of 1 and 8. The paucigravid were the most common in preeclampsia (40%) and primigravid in non-preeclampsia patients (34%). The mean parity of the preeclampsia was 1.26±1.30 and 1.37±1.42 in the non-preeclampsia, without a statistically significant difference, with the extremes of 0 and 5. The nulliparas were majority in both groups (Table 2).

The majority gestational age in the two groups was ≥37 weeks with a mean in the preeclampsia of 36.16±3.41 against 33.43±5.61 in the non-preeclampsia with a statistically significant difference (p=0.047).

Table 2 Obstetric history of our population

Variables	Preeclampsia	Normal pregnant women	P
	N=50 n (%)	N=100 n (%)	
Gravidity			
Mean±standard deviation	2.66±1.45	2.82±1.76	0.579
Primigravid	17 (34)	34 (34)	1
Paucigravid	20 (40)	32 (32)	0.331
Multigravid	13 (26)	30 (30)	0.609
Grand multigravid	0 (0)	4 (4)	0.151
Parity			
Mean±standard deviation	1.26±1.30	1.37±1.42	0.647
Nulliparous	21 (42)	39 (39)	0.723
Primiparous	7 (14)	22 (22)	0.242
Pauciparous	18 (36)	26 (26)	0.204
Multiparous	4 (8)	13 (13)	0.362

The mean body mass index in preeclampsia patients was 31.16±4.71 compared with 30.23±4.73 in non-preeclampsia patients without a statistically significant difference. Obese grade 1 pregnant women were significantly in majority among those with preeclampsia (40% versus 16%) (p=0.001). On the other hand, grade 2 obesity significantly affected 21% of non-preeclampsia patients compared with 6% of preeclampsia patients (p=0.018) (Table 3).

Table 3 Gestational age and Body mass index in our population

Variables	Preeclampsia	Normal pregnant women	P
	N= 50 n (%)	N= 100 n (%)	
Gestational age (wa)			
Mean±standard deviation	36.16±3.41	34.43±5.61	0.047
20-33	18 (36)	37 (37)	0.904
34-36	8 (16)	26 (26)	0.167
≥37	24 (48)	37 (37)	0.196
BMI (Kg/m²)			
Mean±standard deviation	31.16±4.71	30.23±4.73	0.258
18.5-24.9	3 (6)	8 (8)	0.657
25-29.9	21 (42)	51 (51)	0.298
30-34.9	20 (40)	16 (16)	0.001
35-39.9	3 (6)	21 (21)	0.018
≥40	3 (6)	4 (4)	0.584

Discussion

Sociodemographic and clinical characteristics

The international literature recognizes advanced age, primigravidity, nulliparity, obesity and lack of exposure to sperm of partner as factors that may lead to the onset of preeclampsia.

These socio-clinical factors were variably found in our study as much as the work of other authors.

Age

Ages ≤18 years and ≥40years are reported in the literature as a predictor of pre-eclampsia; this data is non-consensual and is the opposite of our findings as well as those of others who otherwise report the same data as us, Awolola et al. in 2016 in Nigeria,¹³ Han et al in 2014 in China,¹⁴ Namavar et al. in 2009 in Iran¹⁵ and Nirmala et

al in 2015 in India.¹⁶ The age group of 25 to 30years of age in these different studies, including our own, corresponds to the optimal age group for human procreation.

Obstetric history

Gestation

Primi-gravidity in our series was neither predominant nor prone to preeclampsia in the group exposed as opposed to pauci-gravids who were more represented although not exposed to this pathology.

Like the reference age of less than 18 years, we also did not find the high frequency of primigravid as reported by the literature.

The mean pregnancy was 2.66±1.45 in the preeclampsia and 2.82±1.76 in the non-preeclampsia patients, with a statistically insignificant difference. These results are identical to those found by Namavar et al. in 2009 in Iran.¹⁵

Parity

It was without specificity and therefore not exhibiting. The mean parity of preeclampsia was 1.26±1.30 and 1.37±1.42 in non-preeclampsia patients with a statistically insignificant difference. Our results were identical to those reported by Awolola et al in 2016 in Nigeria.¹³ Nulliparas were in the majority in both groups, in contrast to the work of Han et al. in 2017 in China¹⁴ which found only nulliparas. This difference in our opinion is to be put to the credit of the limitation of birth in China as opposed to our customs which are projected towards mass procreation.

Gestational age

The gestational variable in our series seemed to us to be exposing to pre-eclampsia. But this finding seems questionable to us because the preeclampsia pregnant women included, unlike the control group, were mostly at term.

The mean gestational age in preeclampsia patients was 36.16±3.41 and 33.43±5.61 in non-preeclampsia patients with a statistically significant difference. These results were identical to those found by Awolola et al. in 2016 in Nigeria,¹⁴ Namavar et al. in 2009 in Iran¹⁵ and Nirmala et al. in 2015 in India.¹⁶

Body mass index (BMI)

Pregnant women with preeclampsia were significantly obese grade 1 while obesity grade 2 statistically affected the control group. This contradiction is compelling because exposure to pre-eclampsia is expected to increase in relation to the severity of obesity. This suggests the probable existence of other factors that only future studies can elucidate.¹⁷⁻¹⁹

Conclusion

At the end of our study, the preeclampsia pregnant woman in our environment is obese pauci-gravid nulliparous aged on average 27.80±5.80 and her profile did not seem to be significantly exposed to the onset of preeclampsia.

As this study is preliminary, we plan to expand it later in a multicenter way with the largest possible sample to elucidate the questions that remained unanswered in our analysis.

Limitation of the study

The size of our sample may lack statistical power. The variables relating to exposure to the sex of the spouse were not explored in this

study given the cultural barriers of our environment. The status of disadvantaged patient seemed to us unusable because highly divergent and without reference in our environment but also vis-à-vis African and international studies.

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Conflicts of interest

The authors declare no conflicts of interest in preparing this article.

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