

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20201770>

Original Research Article

## Management of pre-eclampsia and its complications in the department of gynecology and obstetrics at Donka national hospital Conakry, Guinea

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**Received:** 31 December 2019

**Revised:** 23 February 2020

**Accepted:** 02 March 2020

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### ABSTRACT

**Background:** Vascular-renal syndrome, also known as pre-eclampsia, is a condition specific to pregnancy, usually occurring in the last trimester of pregnancy. Pregnant women are sometimes at risk of unpredictable obstetrical complications such as: hemorrhage, kidney failure, HELLP syndrome, sometimes even brain damage requiring prompt care and multidisciplinary collaboration. Vascular-renal syndromes are the third leading cause of maternal death and also the world's leading cause of perinatal death. Objectives of this study were to analyse the management of vascular-renal syndromes. Calculate their frequency, describe the sociodemographic characteristics of patients, describe the clinical and biological signs of patients, evaluate the maternal-fetal prognosis.

**Methods:** The study was conducted in the department of obstetrics and gynecology of Donka National Hospital. It was a prospective, descriptive, cross-sectional, 6-month study from March 1<sup>st</sup> to August 31<sup>st</sup>, 2015, of pregnant women with pre-eclampsia.

**Results:** The study included 217 cases of pre-eclampsia out of a total of 3054 patients, i.e. a proportion of 7.10%. The proportion of pre-eclampsia was high in patients aged between 15 and 19 years, housewife, married, primary. The predisposing factors were primigestitis, obesity and twinkling. The clinic was dominated by headaches and visual disturbances. Severe preeclampsia in 78.49%, eclampsia in 21.65% or simple hypertension in 1.75%. Maternal and fetal complications were dominated by eclampsia 26.26%, PPH (2.63%), eclamptic coma (0.46%), acute fetal distress 27.19%, and fetal death in utero (11.40%). In order to improve maternal and fetal prognosis it is necessary to provide multidisciplinary care, which unfortunately is not always available in our context.

**Conclusions:** Obstetric emergency is a frequent situation for which a better management would improve the maternal-fetal prognosis.

**Keywords:** Donka national hospital, Management, Maternal-fetal prognosis, Vascular-renal syndromes

### INTRODUCTION

Preeclampsia is defined by the association of gestational hypertension (systolic blood pressure greater than or equal to 140 mmHg and diastolic blood pressure greater

than 90 mmHg) and proteinuria greater than or equal to 300 mg per 24 hours after 20 weeks of amenorrhea (AS). It complicates 0.5 to 7% of pregnancies. It is a severe pregnancy pathology with persistent fetal mortality and morbidity and also maternal accidents such as

retroplacental hematoma, HELLP syndrome and eclampsia. In the United States it is estimated that 15% of preterm births in the United States are due to preeclampsia (82,000 births per year).<sup>1</sup>

In Africa the prevalence of pre-eclampsia averages 4% in the general population but can be as high as 18% in some ethnic groups. It is estimated that pre-eclampsia is responsible for 50,000 to 76,000 maternal deaths worldwide and 35,000 eclamptic seizures per year.<sup>1</sup>

This prevalence is 12.3% in Lomé, Togo, 17.36% in Bobo Djoulaso, Burkinafaso and 17.05% in Donka University Hospital in Guinea.<sup>2-4</sup> In spite of medical advances, the pathophysiology of this pathology remains a theoretical problem whose exact mechanisms remain to be elucidated, even if the most credible hypothesis at the present time would be an abnormal placentation due to a deficit of trophoblastic invasion of the spiral arteries of the placental bed.<sup>1</sup>

Preeclampsia/eclampsia is a public health problem. It is one of the 3 leading causes of maternal mortality in the world and one of the leading factors in peri-natal death in the world.<sup>3</sup>

**METHODS**

The gynecology-obstetrics department of Donka National Hospital was used as a framework for the study. It was a cross-sectional, descriptive and analytical study with a duration of 6 months from March 1<sup>st</sup> to August 31<sup>st</sup>, 2015. The minimum sample size was 217 patients.

**Inclusion criteria**

- All pregnant women with preeclampsia whose gestational age is ≥ 28 SA, whether or not followed in the ward and who delivered in the ward, were included.

**Exclusion criteria**

- Patients with less than 28 weeks of amenorrhea, those who were not managed on the ward.

Limitations of this study were the non-computing of the service data.

Before the study was carried out, we obtained the agreement of the administrative authorities of the service, the patients gave their consent to participate in the study, confidentiality was respected throughout the data collection procedure and the results were used for strictly scientific purposes.

**Statistical analysis**

Data were entered and analyzed using EPI INFO version 6 software. The statistical test used was Chi-square 2,

with a significance level of p <0.05. The statistical test used was the Chi-square 2 test, with a significance level of p <0.05.

**RESULTS**

**Frequency**

Out of a total of 3054 deliveries we recorded a total of 217 cases of pre-eclampsia, either a proportion of 7.10%.

**Table 1: Socio-demographic characteristics and obstetrical history.**

Age	Effective	%
<15	2	0.88%
15-19	53	24.56%
20-24	42	19.30%
25-29	50	22.81%
30-34	32	14.91%
35-39	27	12.28%
40-44	6	2.63%
≥45	6	2.63%
Total	217	100%
Average age: 26.05±2.9 years; extremes: 14 and 45 years		
Marital situation		
Marrieds	212	97.7%
Singles	5	2.30%
Total	217	100%
Profession		
Housewives	159	73.68%
Pupils/students	27	12.28%
Liberal profession	23	10.53%
Official	8	3.51%
Total	217	100%
Parity		
Nullipare	86	39.82%
Paucipar	23	10.62%
Multipara	46	21.24%
Large multipara	6	2.65%
Total	217	100%

**Table 2: Patient distribution by reception mode.**

Reception mode	Effective	%
Coming from home	142	65.49%
Evacuated	75	34.56%
Total	217	100%

**Table 3: Distribution of patients by risk factors.**

Risk factors	Effective	%
Primigestite	82	37.72%
Obesity	8	3.51%
Twin pregnancy	6	2.63%
History of HTA	2	0.88%

**Age**

the mean age of our patients was 26.05±2.9 years with extremes of 14 and 41 years. Many of the women in the sample belonged to the 15-19 age group with a proportion of 24.56%.

**Marital status**

during the study almost all the patients were married women, with a proportion of 98%, which is explained by the fact that marriage is the legal framework for procreation in our country.

**Occupation**

The results of the study show that 73.68% were housewives.

**Parity**

More than 1/3<sup>rd</sup> of the women (39.82%) were nulliparous, followed by primiparous. The results show that slightly more than 1/3<sup>rd</sup> of the women (34.56%) in the sample were evacuees from the peripheral structures of the capital. Risk factors associated with pre-eclampsia were: primigest, obesity, twin pregnancy, and history of hypertension.

**Table 4: Clinical signs and blood pressure figures on reception.**

Clinical signs	Effective	%
Headache	153	70.18%
Visual disturbances	147	67.54%
Epigastric pain	137	63.16%
Oedemas	72	33.33%
Tonic-clonic crisis	57	26.32%
Convulsions	44	20.18%
Tinnitus	17	7.89%
Others (physical asthenia; fever; insomnia; vomiting)	5	2.30%
<b>Systolic blood pressure</b>		
140	2	0.88%
140-180	177	81.58%
190-230	32	14.91%
240 et plus	8	2.63%
Total	217	100%
Mean systolic blood pressure: 170.18 mmHg; Extremes: 140 and 240 mmHg		
<b>Diastolic blood pressure</b>		
<100	5	2.65%
100-120	194	89.38%
130-150	15	7.08%
160 et plus	2	0.88%
Total	217	100%
Mean diastolic pressure: 110.17 mmHg; Extremes: 90 mmHg and 190 mmHg		

The reasons for consultations were dominated by headaches (70.18%), followed by visual disorders (67.54%); epigastric pain (63.16%), edema in (33.33%), and tonic-clonic seizures (24.56%).

Study found a mean systolic blood pressure of 170.18 mmHg, with extremes of 140 and 240 mmHg and a mean diastolic of 111.7 mmHg, with extremes of 90 and 190 mmHg. Thus, 81.58% of parturients had a systolic between 140 and 180 mmHg and 89.38% had a diastolic between 100 and 120 mmHg.

**Table 5: Breakdown of patients according to the results of the assessment at reception.**

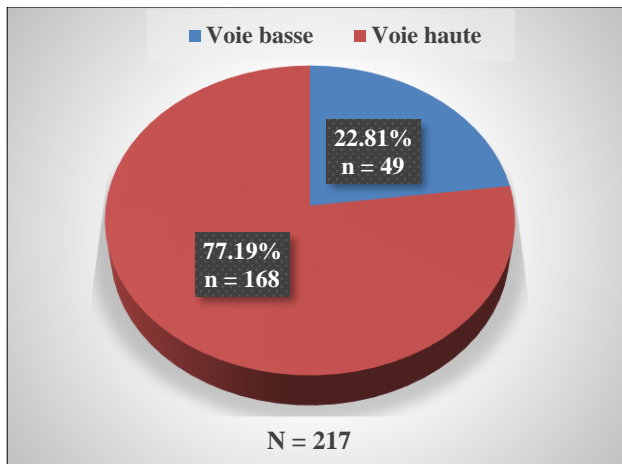
Proteinuria/24h in grams	Effective	%
<=2 g	8	3.51%
3 g	164	75.44%
4 g	36	16.67%
>4 g	9	4.39%
Total	217	100%
Proteinuria/24 hours average: 3.1149 g Extremes: 0.3g and 5g		
<b>Uremia (mmol/l)</b>		
<3	1	3.60%
3.0-3.4	2	21.63%
3.5-3.9	1	39.63%
≥ 4.1	1	35.11%
Total	217	100%
Mean uremia: 3.99 mmol/l; Extremes: 2.53 and 6.90 mmol/l		
<b>Creatinuria (mmol/l)</b>		
≤ 50	0	0.00%
51-60	2	0.91%
61-70	81	37.27%
> 70	134	61.82%
Total	217	100%
Medium create: 74.31 mmol/l; Extremes: 59 and 89 mmol/l		

**Table 6: Breakdown of patients by diagnosis at reception and time of diagnosis.**

Diagnostic	Effective	%
Severe pre-eclampsia	166	76.49%
Eclampsia	47	21.65%
gestational hypertension	4	1.75%
Total	217	100%
<b>Time of diagnosis</b>		
Post-partum	20	9.01%
Term pregnancy	160	73.87%
During work	37	17.12%
Total	217	100%

The mean 24-hour proteinuria was 3.49 g with extremes of 0.3 g and 5 g.

A little more than ¾ of parturients, either 75.44%, had proteinuria of 3 g per 24 hours. The average uricemia was 3.99 mmol/l with hyper uricemia (≥4.1 mmol/l in 35.11%.



**Figure 1: Distribution of patients by mode of delivery.**

**Table 7: Distribution of patients by maternal complications.**

Maternal complication	Effective	%
Eclampsia	57	26.26%
HRP	6	2.63%
Kidney failure	2	0.88%
eclamptic coma	1	0.46%
Death	6	2.63%

**Table 8: Patient distribution by fetal complications.**

Fetal complication	Effective	%
Wrong Apgar	88	40.35%
SFA	59	27.19%
Perinatal mortality	25	11.40%

More than ¾ of women gave birth by caesarean section, 77.19%. This could be explained by the severity of the clinical and paraclinical pictures at the reception desk on which the maternal-fetal prognosis depends

Maternal complications were dominated by eclampsia 26.26%, retroplacental hematoma (6.88%), renal failure (0.88%), and eclamptic coma (0.46). We recorded 6 cases of death or 2.63%. Fetal complications were dominated by a poor APGAR score in 40.35% requiring resuscitation, acute fetal suffering 27.19%. Study recorded 25 cases of perinatal deaths, either 11.52%.

## DISCUSSION

### Overall frequency

During the study period we collected 217 cases of pre-eclampsia out of a total of 3054 deliveries, either a proportion of 7.10%. An identical proportion (7.1%) of pre-eclampsia was found in Morocco by Magee LA et al.<sup>5</sup> Slightly higher proportions of pre-eclampsia were found in Togo (12.3%), Nigeria (10.2%), Pakistan (9.3%) and Mozambique (10.9%).<sup>2,6</sup>

### Maternal age

The mean age of our patients was 26.05±2.9 years with extremes of 14 and 41 years. Many of the women in the sample belonged to the 15-19 age group with a proportion of 24.56% (Table 1).

An identical mean age of 26.37 years was found in Bobodjoulasso in Burkina faso by Diallo JW et al with extremes of 15 and 40 years. The most represented age groups in their study were those aged 26 to 30 years with 29.1% of cases and those aged 15 to 20 years with 25.2%.<sup>3</sup> In Lomé, Togo Baragou S et al found a higher mean age of 30±7 years, with extremes of 15 and 44 years, and preeclampsia was more frequent (50%) among 30-39 year olds.<sup>2</sup> In Keita M et al found a mean age lower than ours of 20±4 years.<sup>7</sup>

### Marital status

During the study almost all the patients were married women, with a proportion of 98%, which is explained by the fact that marriage is the legal framework for procreation in our country (Table 1).

### Occupation

The results of the study show that 73.68% were housewives (Table 1). The high proportion of housewives was reported in several studies such as that of Baragou SM et al, in Lomé, Togo (33.3%); and that of SEPOU A et al, in the Central African Republic (52.8%).<sup>2,8</sup> The low socioeconomic level, early marriages combined with low contraceptive use could explain our result.

### Parity

More than 1/3<sup>rd</sup> of the women (39.82%) were nulliparous, followed by Primiparous 25.66% (Table 1). This result is comparable to several data in the African literature. Primiparity was cited as a risk factor by Diouf AA et al in Dakar, Senegal, by Keita M et al in Mali respectively (58.1%) and (65.8%).<sup>7,9</sup>

### Mode of patient admission

The results show that slightly more than 1/3<sup>rd</sup> of the women (34.56%) in the sample were evacuees from the peripheral structures of the capital (Table 2). Higher evacuation rates were noted in several African studies: at the CHU-Yalgado in Ouagadougou, Ouattara et al, reported 72.4% of referrals, and in Senegal Djouf AA et al, reported (82.3%) evacuations for eclampsia.<sup>9,10</sup>

### Risk factors

Risk factors associated with pre-eclampsia were: primigravida, obesity, twin pregnancy, and history of hypertension. In Cameroon Mboudou et et al found that the risk factors associated with eclampsia were

dominated by age less than 20 years, primigravidity, baseline, and oliguria (Table 3).<sup>11</sup>

#### **Distribution of patients according to clinical signs at reception**

The reasons for consultations were dominated by headaches (70.18%), followed by visual disorders (67.54%); epigastric pain (63.16%), edema in (33.33%), and tonic-clonic seizures (24.56%) (Table 4). An almost identical clinical picture was found in Bobo Djoullasso by Diallo JW et al, general altered state or a state of coma, (25.3%), edema of the lower limbs (76.4%) and visual disorders in 33% of cases.<sup>3</sup>

#### **Blood pressure**

Study found a mean systolic blood pressure of 170.18 mmHg, with extremes of 140 and 240 mmHg and a mean diastolic of 111.7 mmHg, with extremes of 90 and 190 mmHg. Thus, 81.58% of parturients had a systolic between 140 and 180 mmHg and 89.38% had a diastolic between 100 and 120 mmHg (Table 4). Study data are comparable to those reported in the study by Baragou S et al in Lomé where the mean systolic BP was 182.5 mmHg, with a maximum value of 260 mmHg, a mean diastolic BP of 114.7 mmHg and a maximum value of 150 mmHg.<sup>2</sup>

#### **Biological balance sheet**

The mean 24-hour proteinuria was 3.49 g with extremes of 0.3 g and 5 g. A little more than  $\frac{3}{4}$ <sup>th</sup> of parturients, either 75.44%, had proteinuria of 3 g per 24 hours. The average uricemia was 3.99 mmol/l with hyper uricemia ( $\geq$  4.1 mmol/l in 35.11%, (Table 5).

#### **Breakdown of patients by diagnosis at reception and time of diagnosis**

The clinical and paraclinical data allowed us to diagnose severe preeclampsia in 76.49% and eclampsia in 21.65%. These diagnoses were made at term in 73.87% of cases during labour and 9.01% of cases during postpartum (Table 6). Several elevations of BP during pregnancy are described as those of Mboudou et al in Cameroon who reported 77.88% of cases of preeclampsia and 15.38% of gestational hypertension.<sup>11</sup> In Keita M, et al, reported 70.6% preeclampsia and 29.4% eclampsia.<sup>7</sup>

#### **Mode of delivery**

More than  $\frac{3}{4}$ <sup>th</sup> of women gave birth by cesarean section, 77.19%. This could be explained by the severity of the clinical and paraclinical pictures at the reception desk on which the maternal-fetal prognosis depends (Figure 1). Our result is comparable to the 75.5% of caesarean sections reported in Senegal by Djouf AA et al, but a lower proportion of caesarean section deliveries (41.13%) was reported in Mali by Keita M et al.<sup>7,9</sup> In Ethiopia

Netsanet AA et al describe that only 1.3% of their patients delivered by caesarean section.<sup>12</sup>

#### **Maternal prognosis**

Maternal complications were dominated by eclampsia 26.26%, retroplacental hematoma (6.88%), renal failure (0.88%), and eclamptic coma (0.46). We recorded 6 cases of death or 2.63% (Table 7). In Algeria, Kichou B et al report 28.7% of complications, including 5 deaths, i.e. 1.98% of maternal deaths.<sup>13</sup>

#### **Fetal prognosis**

Fetal complications were dominated by a poor Apgar score in 40.35% requiring resuscitation, acute fetal suffering 27.19%. Study recorded 25 cases of perinatal deaths, i.e. 11.52% (Table 8). In Algeria, Kichou B et al, report 58.2% prematurity, 49.7% intrauterine growth retardation, and 6.7% fetal death.<sup>13</sup> In Dakar (Senegal) Boiro D et al, found in 141 hospitalized neonates of preeclamptic mothers that neonatal complications were dominated by: prematurity 93 cases (65.93%), intrauterine growth retardation 98 cases (69.50%), respiratory distress 58 cases (41.13%), and perinatal asphyxia 8 cases (5.6%).<sup>14</sup>

## **CONCLUSION**

The incidence of preeclampsia was 7.10%. Predisposing factors were mainly predigesting, obesity and twinkling.

The clinic was dominated by high blood pressure, headache and visual disturbances. The main diagnoses selected were severe preeclampsia in 76.49%, and eclampsia in 21.65%. More than  $\frac{3}{4}$ <sup>th</sup> of women gave birth by caesarean section, 77.19%. The main maternal and fetal complications found in this study were eclampsia in 26.26%, retro placental hematoma (6.88%), renal failure (0.88%), poor Apgar score in 40.35%, acute fetal distress in 27.19%. We recorded 6 cases of maternal deaths or 2.63% and 25 cases of perinatal deaths or 11.52%.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Diallo BA, Bah OH, Conté I, Sow IS, Bah IK, Touré S, et al. Management of pre-eclampsia and its complications in the department of gynecology and obstetrics at Donka national hospital Conakry, Guinea. *Int J Reprod Contracept Obstet Gynecol* 2020;9:1858-63.