

## Postpartum Arterial Hypertension in African Setting, Ouagadougou

Hyacinthe Zamane<sup>1,2</sup>, Yibar Kambire<sup>2,3</sup>, Sibraogo Kiemtore<sup>1,2</sup>, Dantola Paul Kain<sup>1</sup>, Raissa Soubeiga<sup>1</sup> and Ali Ouedraogo<sup>1,2</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Yalgado Ouedraogo Teaching Hospital in Ouagadougou, Burkina Faso

<sup>2</sup>Unity of Training and Research in Health Sciences (UFR/SDS), University of Ouagadougou, Burkina Faso

<sup>3</sup>Department of Medicine and Medical Specialties, National Blaise Compaoré Teaching Hospital, Ouagadougou, Burkina Faso

\*Corresponding author: Zamane H, Department of Obstetrics and Gynecology, Yalgado Ouedraogo Teaching Hospital in Ouagadougou, Burkina Faso, Tel: 0022670259566; E-mail: zamanehyacinthe@gmail.com

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### Abstract

**Objective:** The study's objective was to determine the epidemiological, clinical, ancillary investigations, therapeutic patterns and the outcome of postpartum hypertension.

**Patients and Methods:** A retrospective study was carried out from January 2013 to December 2014 in the departments Obstetrics and Cardiology of two Teaching Hospitals in Ouagadougou, Burkina Faso. All cases of hypertension or eclampsia which newly occurred within 42 days postpartum without prior medical history of hypertension were included in the study.

**Results:** One hundred and seventeen cases of postpartum hypertension were recorded representing 1.08% of deliveries. The mean age was 26.7 years, primiparous represented 39.1% of cases. The mean days between delivery and diagnosis were  $5.6 \pm 6.3$  days. Hypertension was discovered as eclampsia in 61.95% of cases. It was severe hypertension in 42.39% of cases. The blood pressure was controlled in 90.22% within the first 48 hours.

**Conclusion:** Postpartum period follow up with systematic blood pressure and urine protein measurements are necessary.

**Keywords:** Arterial hypertension; Postpartum; Eclampsia; Blood pressure

### Background

In Sub-Saharan Africa, preeclampsia is a major concern in obstetrics and gynecology units [1]. Its prevalence and that of its major complication, eclampsia ranges between 1.4% and 11.61% [2-5]. Preeclampsia carries significant risk of complications for both the mother and fetus [2,3,6]. A sudden rise in blood pressure can occur after delivery without any prior medical history during the pregnancy. It most often occurs three to six days after delivery, when most women were discharged home. The causes of postpartum hypertension are not clearly established, but its consequences can be severe [7]. Further research is then necessary. Little is known about postpartum hypertension in our setting. The purpose of this study was to describe the epidemiological, clinical, ancillary investigations, therapeutic pattern and outcome of patients with postpartum hypertension in order to contribute to a better management of the condition.

### Patients and Methods

A descriptive retrospective study was undertaken from January 1<sup>st</sup>, 2013 to December 31<sup>st</sup>, 2014. The study took place in the department of obstetrics and gynecology of Yalgado Ouedraogo Teaching Hospital and the Mother and Child unit of the National Hospital Blaise Compaore in Burkina Faso. The departments of cardiology in both hospitals where patients were referred for management have also constituted data collection's sites. Women in whom hypertension or

eclampsia occurred and those treated for newly diagnosed hypertension within 42 days postpartum without prior medical history of arterial hypertension were included.

Hypertension was defined as systolic blood pressure  $\geq 140$  mmHg and/or diastolic blood pressure  $\geq 90$  mmHg at least during two measurements. The medical records, outpatient department records and postnatal visits records were the sources of data collection. The studied variables were made up of the socio-demographic characteristics of the study population as well as data relating to the postpartum hypertension. The characteristics of the population included socio-demographics, past obstetrical history, cardiovascular risk factors and the history of index pregnancy as well as the history of delivery. The variables related to postpartum hypertension included clinical, ancillary investigations, therapeutic and those of the short and medium term outcomes. Results were expressed as mean  $\pm$  standard deviation and relative frequencies.

### Results

#### Prevalence of postpartum hypertension

During the study period, 17,935 patients were admitted in the departments of obstetrics and gynecology of the teaching hospitals making a total of 10,824 recorded deliveries. One hundred and seventeen (117) cases of postpartum hypertension were diagnosed. The ratio of postpartum hypertension was therefore 0.65% of all admissions and 1.08% of all births. Ninety two (92) out of 117 recorded cases were used for this study.

### Patient's characteristics

The mean age was  $26.7 \pm 6.61$  with extremes of 16 and 40 years. Housewives accounted for the majority of the sample representing 51.1%. The mean parity was  $2.43 \pm 1.65$  (range 1 to 8). Primiparous represented 39.1% of the study population. The mean body mass index was  $29 \pm 4.7 \text{ kg/m}^2$  (range 22.03 to 40.26). Overweight or obesity, physical inactivity and a family history of hypertension were the cardiovascular risk factors found respectively in 12%, 7.6% and 2.2% of patients. The mean number of antenatal visits made per patient was  $4 \pm 0.6$  (range 2 to 5). At least four antenatal visits were conducted in 82.61% of patients. The pregnancy was single fetus in 80 cases (86.96%). Vaginal delivery accounted for 91.5% of cases. The characteristics of the study population are summarized in Table 1.

Characteristics	Number	Percentage (%)
<b>Age (years)</b>		
<20	14	15.22
20-29	43	46.74
30-39	33	35.87
>40	2	2.17
<b>Occupation</b>		
Housewife	47	51.08
Informal sector	18	19.56
Student	13	14.14
Worker with income	14	15.22
<b>Parity</b>		
Para 1	36	39.13
Para 2	34	36.96
Multipara	22	23.91
<b>Oral combined pills used</b>		
YES	6	6.5
No	86	93.5
<b>Number of antenatal visits</b>		
<4	16	17.39
>4	76	82.61
<b>Type of cyesis</b>		
Single fetus	80	86.96
Twins	12	13.04
<b>Mode of delivery</b>		
Vaginal delivery	87	94.57
Caesarean section	5	5.43

**Table 1:** Characteristics of the patients with postpartum hypertension (n=92).

### Data relating to the postpartum hypertension

#### Clinical patterns

The mean delay for diagnosis of hypertension was  $5.6 \pm 6.3$  days after delivery (range 1 to 41). The diagnosis was made in 67 patients (72.83%) in the first 6 days of postpartum. Forty-eight patients (52.2%) were still on admission for postpartum monitoring in which hypertension was diagnosed. Forty-four patients (47.8%) were readmitted for hypertension and its complications. Hypertension was revealed by a complication in 58 cases (63.04%) of whom 57 cases (61.95%) were eclampsia and one case (1.09%) of acute pulmonary edema. The mean systolic blood pressure was  $164.53 \pm 15.78 \text{ mmHg}$  (range 140 to 220). The mean diastolic blood pressure was  $104.35 \pm 12.45 \text{ mmHg}$  (range 80 to 140). According to the classification of hypertension in pregnancy, it was severe hypertension in 42.39% of cases. Clinical data relating to hypertension have been summarized in Table 2.

Clinical pattern	Number	Percentage (%)
<b>Time of occurrence of the hypertension in the postpartum</b>		
First 24 hours	33	35.87
Between 2 <sup>nd</sup> and 6 <sup>th</sup> day	34	36.96
Between 7 <sup>th</sup> and 42 <sup>nd</sup> day	25	27.17
<b>Circumstances of diagnosis</b>		
Complication's signs	58	63.04
Symptoms without complication	19	20.66
No obvious signs	15	16.3
<b>WHO classification of Pregnancy Induced Hypertension (PIH)</b>		
Mild to moderate PIH	53	57.61
Severe PIH	39	42.39

**Table 2:** Clinical pattern of postpartum hypertension in Ouagadougou (n=92).

#### Ancillary investigations patterns

The 24 hours urine protein was significant in 75% of cases and severe in 2.17% of cases. Hyperuricemia was noted in eight cases (42.10%). Renal failure was noted in six patients (6.52%) and anemia in eleven cases (11.95%). Fasting blood sugar was performed in 42 patients and revealed 2 cases (4.76%) of hypoglycemia. Six cases (14.28%) of hyperglycemia were found during the random blood sugar check. Serum electrolytes were performed in 50 patients and showed hyponatremia in four of them (8%), hypokalemia in 14 patients (28%), hyperkalemia in one patient (2%) and hypocalcaemia in 43 patients (86%).

Liver enzymes were performed in 18 patients and showed an increase of aspartate aminotransferase in seven cases (38.89%) and alanine aminotransferase in 4 cases (22.22%). A 12-lead electrocardiogram was performed in two patients with dyspnea and acute pulmonary edema, which was pathological in both cases with left ventricular hypertrophy, left atrial hypertrophy and arrhythmias in each case. A cardiac Doppler-ultrasound scan was performed in the patient with acute pulmonary edema; it has revealed dilatation of the

left atrium, preserved left ventricle systolic function (left ventricle ejection fraction of 65%) and elevated pulmonary pressures without signs of pulmonary embolism. Four patients underwent ophthalmologic assessment. It was normal in one case, and pathological in the other cases with hypertensive retinopathy stage II and III.

## Treatment and Outcome

A cardiologic documented follow up was found in 14 patients (15.22%). All patients received antihypertensive therapy. A single antihypertensive drug was used in 60.87% of cases and two drugs in 39.13%. Magnesium sulfate was the only anti-seizure drug administered. Figure 1 show the classes of drugs used. The mean hospital stay was  $4.3 \pm 4.3$  days (range 1 to 29). Complications were dominated by eclampsia (Figure 2). Hypertensive retinopathy has been insufficiently screened and diagnosed in three of the four patients who had ophthalmological examination. No maternal death was recorded. The change in blood pressure was characterized by a satisfactory control in 90.22% of patients in the first 48 hours. Follow-up after discharge was not sufficient to determine the final outcome of patients.

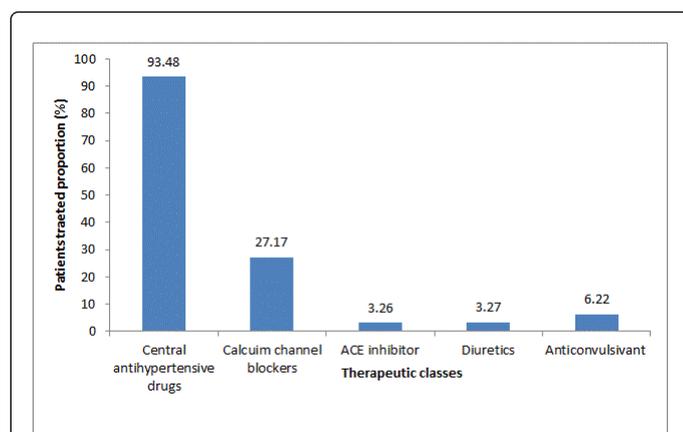


Figure 1: Prescription of therapeutics classes in postpartum hypertension (n=92).

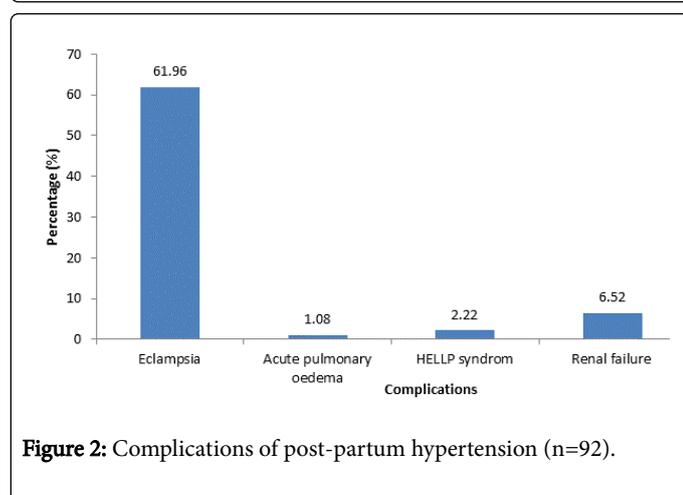


Figure 2: Complications of post-partum hypertension (n=92).

## Discussion

The prevalence of postpartum hypertension is not well known and it varies [8-10]. The reasons are among others the lack of systematic monitoring of blood pressure during postnatal visits, under reporting of cases seen in emergency units or in consultations other than obstetrics and gynecology for symptoms related to the postpartum and the under reporting of cases particularly the mild to moderate asymptomatic hypertension who does not report to the health facility. Also real cases of pregnancy-induced hypertension, preeclampsia and chronic hypertension can be diagnosed late in the postpartum period [8,9].

Over 4/5 of the patients had at least four antenatal care (ANC) visit as recommended by the World Health Organization (WHO) at the time of the study period [11]. Quality ANC allows early detection of hypertension and minimizes the occurrence of complications during pregnancy or in the postpartum period. According to Millogo et al. 7.1% of hypertension associated with pregnancy is discovered in the postpartum [12].

Our prevalence of 1.2% is likely an underestimate of the reality. Indeed, the presenting complaints and the reasons for admission of all of our patients indicate that only the most serious cases have sought medical care in the near postpartum period. The mild cases managed at outpatient department basis were not taken into account. Risk factors specifically mentioned in the occurrence of true postpartum hypertension are volume overload in connection with an intravascular influx of extravascular fluid or in connection with intravenous therapy, some medications such as nonsteroidal anti-inflammatory drugs, ergot derivatives, phenylpropranolamine and epinephrine as well as the postpartum stress [9].

Postpartum hypertension occurs relatively early within 24 hours after delivery or usually three to six days after when most women were discharged [9,13,14]. The WHO recommendations require that clients who delivered recently should be kept in hospital for the first 24 hours, they should be reviewed between the second and third day, then between the 6<sup>th</sup> and 14<sup>th</sup> days and finally to the 42<sup>nd</sup> day postpartum [15].

These visits should be of quality which systematically integrates the measurement of blood pressure and checking for albuminuria and with emphasis to the classical signs of Dieulafoy. This should allow early diagnosis of postpartum hypertension and limiting complications. In our study it was diagnosed during a complication in the majority of cases (63.04%). Biologically, renal disease and HELLP syndrome should be watched for. Proteinuria which results from glomerular lesions is a poor prognostic factor. It was significant in 3/4<sup>th</sup> of cases. This proteinuria is an independent marker of cardiovascular risk with a relative risk of coronary events between 1.7 and 2; it is also at risk of progression towards chronic hypertension in a quarter of cases [16,17].

The cardiovascular investigations were carried out on each case based on the clinical presentation. This attitude is advocated by some authors [9]. The single antihypertensive drug was preferred (60.87%); using first-line central antihypertensive drugs (93.48%). This class of antihypertensive drugs and calcium channel blockers are respectively the first and second line drugs in the antihypertensive drugs during pregnancy [9,16,18]. Magnesium sulfate was used in 65.22% of patients in our study, and remains the drug of choice for the treatment of eclampsia and its prevention [18,19].

Despite the complications (eclampsia, pulmonary edema), the outcome has been favorable in our patients in the short-term. The occurrence of postpartum eclampsia is less serious than in the antepartum [20]. The control of hypertension was achieved relatively early. However some challenges in the follow-up after hospital discharge have not allowed to know the final outcome of most of our patients. The risk of reoccurrence and progression to chronic hypertension is reported in the literature [17,21]. A good coordination between cardiologists and obstetricians in the postpartum follow up is essential.

## Conclusion

Our study confirms the frequency and severity of postpartum hypertension. Careful postpartum monitoring including systematic measurement of blood pressure and albuminuria could improve detection and reduce complications. A prospective study is needed to study the risk factors of occurrence of postpartum hypertension and to well identify the outcome in our setting.

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