

Prevalence of Preeclampsia Complications: Retrospective Study at EHS Mother and Child Hospital, Laghouat, Algeria

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Abstract

Original Research Article

Objective: To evaluate the prevalence and complications of preeclampsia in a specialized hospital in Algeria. **Methods:** Descriptive retrospective study conducted from January 1 to November 30, 2024, at the EHS Mother and Child Hospital in Laghouat. All women who presented with preeclampsia with or without complications were included. Inclusion criteria included gestational hypertension (BP $\geq 140/90$ mmHg) associated with proteinuria (≥ 300 mg/24h). **Results:** Out of 2,160 deliveries, 157 cases of gestational hypertension were recorded, including 53 cases of preeclampsia (33.75%). The mean age was 34 years (20-43 years), with a predominance of multiparous women (60%). Maternal obstetric complications affected 26.39% of *patients*: retroplacental hematoma (13.2%), HELLP syndrome (7.54%), eclampsia (3.77%). Fetal complications occurred in 24.52% of cases, dominated by intrauterine growth restriction (15.09%) and intrauterine fetal death (9.43%). All patients received antihypertensive treatment, 15.1% received magnesium sulfate, and 24.5% underwent emergency cesarean section. **Conclusion:** Preeclampsia presents significant prevalence with important maternal and fetal complications. Rigorous monitoring and early multidisciplinary management are essential to improve maternal-fetal prognosis.

Keywords: Preeclampsia, complications, gestational hypertension, maternal morbidity and mortality, Algeria.

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INTRODUCTION

Preeclampsia is a multisystemic pathology specific to pregnancy, characterized by the onset of hypertension associated with proteinuria after 20 weeks of amenorrhea in a previously normotensive woman [1]. This condition complicates 2 to 8% of pregnancies worldwide and represents one of the main causes of maternal and perinatal morbidity and mortality [2].

The World Health Organization estimates that preeclampsia is responsible for approximately 76,000 maternal deaths and 500,000 perinatal deaths per year worldwide [3]. In sub-Saharan Africa, the incidence varies between 1.8 and 7.1% depending on the region [4]. In Algeria, few recent epidemiological studies document this pathology in different regions of the country.

The pathophysiology of preeclampsia involves defective trophoblastic invasion of uterine spiral arteries, leading to placental ischemia and the release of anti-angiogenic factors responsible for maternal endothelial dysfunction [5].

Formidable:

eclampsia, HELLP syndrome, stroke, acute pulmonary edema for the mother; intrauterine growth restriction, prematurity, fetal death for the child [6].

The objective of this study was to evaluate the prevalence of preeclampsia and analyze its maternal and fetal complications in a specialized hospital center in the Laghouat region, Algeria.

MATERIALS AND METHODS

Study Setting

The study was conducted at the Specialized Hospital Establishment (EHS) Mother and Child Elhakim Saadan in Laghouat, a regional reference center with 9 specialized units including a high-risk pregnancy service, an operating room, and a neonatology service.

Study Type and Period

This was a descriptive retrospective study covering an 11-month period, from January 1 to November 30, 2024.

Study Population

All pregnant women who delivered at the EHS and presented with preeclampsia with or without complications constituted the study population.

Inclusion Criteria

- Gestational hypertension (BP $\geq$ 140/90 mmHg)
- Proteinuria $\geq$ 300mg/24h or $\geq$ 2 crosses on urine dipstick
- Gestational age $\geq$ 20 weeks of amenorrhea

Exclusion Criteria

- History of chronic hypertension
- Hypertension discovered before 20 weeks of amenorrhea
- History of nephropathy

Variables Studied

The collected data included epidemiological characteristics (age, residence, medical history), clinical profile (blood pressure, clinical signs), paraclinical profile (proteinuria, platelet count), maternal and fetal complications, and management modalities.

Statistical Analysis

Data entry was performed using Microsoft Excel 2010 and analysis using SPSS version 30. Results are expressed as numbers and percentages.

RESULTS

Prevalence

Out of 2,160 deliveries during the study period, 157 cases of gestational hypertension were recorded, among which 53 women presented with complicated preeclampsia, representing a prevalence of 2.45% relative to all deliveries and 33.75% among gestational hypertensions.

Epidemiological Characteristics

Maternal Age

The mean age of patients was 34 years (range: 20-43 years). The most represented age group was 40-45 years (30.18%), followed by the 30-35 years and 35-40 years groups (20.75% each).

Residence

The majority of patients (84.90%) resided in urban areas, compared to 15.09% in rural areas.

Medical History

Among patients, 37.7% had medical history: diabetes (13.2%), thyroid disorders (9.43%), autoimmune diseases (3.77%).

Obstetric History

Obstetric history was present in 83.01% of patients: previous cesarean section (45.28%), abortions (37.73%). Regarding parity, 60% were multiparous, 23% primiparous, and 17% pauciparous.

Clinical Profile

Gestational Age

The mean gestational age at admission was 37 weeks. The majority of patients (71.7%) were admitted between 35-40 weeks, 26.4% between 30-35 weeks.

Blood Pressure

At admission, 45.3% of patients had systolic blood pressure $\geq$ 160 mmHg and 30.2% had diastolic blood pressure $\geq$ 110 mmHg, defining severe preeclampsia.

Clinical Signs

Edema was the main clinical sign (30.18%), followed by edema-headaches-neurosensory signs combination (22.64%). Nearly 28.3% of patients were asymptomatic.

Paraclinical Profile

Proteinuria

Urine dipstick showed proteinuria $\geq$ 2 crosses in 64.15% of patients. 24-hour proteinuria was performed in only 18.87% of patients, showing proteinuria $\geq$ 3g/24h in 16.98% of them.

Platelet Count

Thrombocytopenia was present in 22.7% of patients: moderate ($<100,000/\text{mm}^3$) in 18.9% of cases and severe ($<50,000/\text{mm}^3$) in 3.8% of cases.

Complications

Maternal Obstetric Complications

Obstetric complications affected 26.39% of patients:

- Retroplacental hematoma: 13.2%
- HELLP syndrome: 7.54%
- Eclampsia: 3.77%
- Hepatic subcapsular hematoma: 1.88%

General Maternal Complications

General complications affected 5.65% of patients:

- Stroke: 3.77%
- Acute renal failure: 1.88%

Fetal Complications

Fetal complications affected 24.52% of newborns:

- Intrauterine growth restriction: 15.09%
- Intrauterine fetal death: 9.43%

Therapeutic Management

All patients (100%) received antihypertensive treatment, mainly nicardipine. Magnesium sulfate was administered to 15.1% of patients, antenatal corticosteroids to 13.2%, and 24.5% underwent emergency cesarean section. Hospital stay duration was 1-5 days for 58.49% of patients, 5-10 days for 15.09%, and $\geq$ 10 days for 3.77%.

DISCUSSION

Prevalence

Our prevalence of 2.45% is comparable to international data where preeclampsia complicates 2-8% of pregnancies⁷. It is similar to Tunisian results (1.34%) [8] but remains lower than those from Tizi-Ouzou (7.8%) [9]. This variation can be explained by methodological differences and inclusion criteria used.

Epidemiological Profile

Maternal Age

The mean age of 34 years in our series confirms the relationship between advanced maternal age and preeclampsia risk, in agreement with numerous studies [10,11]. Cellular aging, endothelial dysfunction, and increased oxidative stress explain this association [12]. Our results differ, however, from African studies showing predominance in young women [13,14].

Parity

The predominance of multiparous women (60%) in our study contrasts with classical literature showing increased risk in primiparous women [15,16]. This difference could reflect local socio-cultural factors and late pregnancies in multiparous women.

Maternal Complications

The obstetric complications rate (26.39%) in our series is concerning. Retroplacental hematoma (13.2%) exceeds rates reported in Morocco (9.7%) [17]. HELLP syndrome (7.54%) remains within the international range of 4-12% [18]. Eclampsia (3.77%) is less frequent than in Benin (36.8%) and Madagascar (30.25%) [19,20], probably reflecting better early management.

General complications, particularly stroke (3.77%), correspond to Nigerian data (3%) [21] and highlight the potential severity of preeclampsia.

Fetal Complications

IUGR (15.09%) represents the main fetal complication, resulting from chronic placental insufficiency. This rate remains lower than Algerian data from Tizi-Ouzou (49.7%) [22] but remains significant. Intrauterine fetal death (9.43%) reflects the severity of managed cases.

Therapeutic Management

Universal use of antihypertensives in our series follows international recommendations [23]. Recourse to magnesium sulfate (15.1%) appears suboptimal compared to international standards recommending its systematic use in severe preeclampsia²⁴. In Cameroon, 42.4% of patients received it [25].

The cesarean section rate (24.5%) remains moderate compared to Cameroonian series (60.3%) and Algerian series from Laghouat (79.93%) [26,27], suggesting a less interventional approach.

Limitations and Recommendations

Our study presents important limitations: documentary gaps, missing data concerning family history, non-systematic 24-hour proteinuria. These deficiencies highlight the need to improve medical record keeping and protocol standardization.

We recommend:

- Strengthening early screening for risk factors
- Standardizing management protocols
- Improving medical documentation
- Continuing education for healthcare personnel
- Developing structured postpartum follow-up

CONCLUSION

This study confirms that preeclampsia remains a major public health problem in Algeria, with a prevalence of 2.45% and complications affecting more than a quarter of patients. Retroplacental hematoma and IUGR constitute the main maternal-fetal complications.

Improved prognosis requires early screening for risk factors, close monitoring of high-risk pregnancies, and standardized multidisciplinary management. The observed documentary gaps necessitate reform of medical record keeping to enable better follow-up and quality clinical research.

Ethics Statements

Human Ethics and Consent to Participate:

This retrospective study was conducted using anonymized medical records. No direct patient contact was involved. The study protocol was approved by the institutional review board of EHS Mother and Child Hospital, Laghouat. Informed consent was waived due to the retrospective nature of the study and anonymization of data.

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Author Contributions

Dr. Boubir Walid: Conceptualized and designed the study, collected and analyzed the data, drafted the initial manuscript, and participated in manuscript revision.

Prof. Matouk Mohamed:

Supervised the study design, provided clinical expertise, analyzed and interpreted the results, critically reviewed and revised the manuscript, and approved the final version for submission.

Both authors contributed to the interpretation of results and approved the final manuscript.

Conflicts of Interest: The authors declare that they have no competing interests or conflicts of interest related to this study.

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