

Renal Insufficiency Among the Maternal Complications of Arterial Hypertension During Pregnancy at Kankan Regional Hospital

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Received date: July 24, 2024, Manuscript No. IPJCN-24-19435; **Editor assigned date:** July 29, 2024, PreQC No. IPJCN-24-19435 (PQ); **Reviewed date:** August 12, 2024, QC No. IPJCN-24-19435; **Revised date:** August 19, 2024, Manuscript No. IPJCN-24-19435 (R); **Published date:** August 26, 2024, DOI: 10.36648/2472-5056.9.4.263

Citation: Camara MLT, Soriba B, Aly T, Abou T, Bobo BK, et al. (2024) Renal Insufficiency Among the Maternal Complications of Arterial Hypertension During Pregnancy at Kankan Regional Hospital. J Clin Exp Nephrol Vol.9 No.4: 263.

Abstract

Introduction: Pregnancy-induced arterial hypertension (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure >90 mmHg) appearing after the 20th week of amenorrhoea. The occurrence of disorders that can strongly engage the vital prognosis of the mother and/or the foetus or the newborn when associated with certain pathologies such as the case of diabetes, arterial hypertension. In this study, we evaluate the role of renal failure among the maternal complications of gestational arterial hypertension, in order to reduce the rate of renal aggression during pregnancy.

Material and methods: This was a prospective descriptive study carried out in the regional hospital of Kankan. The study was carried out on all pregnant women, parturients or women following childbirth with a resting blood pressure $\geq 140/90$ mmHg, who agreed to answer our questions without distinction of age or origin, whatever the clinical picture. Data were collected on individual survey forms. The study variables were quantitative and qualitative. Data entry and analysis were carried out using software (Word, Excel) and Epi Info version (7.1.0) 2014. Our results were presented in the form of text and tables.

Results: Out of a total of 1500 patients seen during the study period, we recorded 70 hypertensive pregnant women, a frequency of 4.66%. The mean age of the patients was 24 years, with extremes of 15 and 44 years and a standard deviation of 7 years. Systolic blood pressure was 160 mmHg in 46 cases, or 65.71% and diastolic blood pressure was >110 mmHg in 45 cases, or 64.29%. The most frequent complications of arterial hypertension during pregnancy were classified according to high proportions, with acute renal failure in 4th place in 6 cases, a frequency of 8.57%.

Conclusion: Arterial hypertension is a condition that should not be underestimated. The frequency of hospital admissions varies according to the study. In our study, the frequency was 4.66%, with young patients being the most represented and maternal complications were dominated by eclampsia in 34 cases (48.57%), with acute renal failure in 4th place in

6 cases (8.57%). A study on a larger population of pregnant women could help identify hypertension during pregnancy, in order to reduce the impact of hypertension and complications in pregnant women.

Keywords: Renal failure; Maternal complications; Hypertension; Pregnancy; Kankan

Introduction

Pregnancy-induced arterial hypertension (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure >90 mmHg) occurring after the 20th week of amenorrhoea [1]. It is estimated that 95% of pregnancies are at 'low risk' of maternal and/or foetal pathology. The onset of disorders that can seriously affect the vital prognosis of the mother and/or the foetus or the newborn when associated with certain pathologies, such as diabetes or Arterial Hypertension (AH). Arterial hypertension in pregnant women is a condition that should not be underestimated. The incidence of hypertension during pregnancy is similar in most Western countries, with 9.3% in France, 10.8% in the United Kingdom and 10%-15% in the United States. Given the maternal and foetal complications it causes and the complexity of its management, it is the third leading cause of maternal mortality (after haemorrhage and infection) and the leading cause of perinatal mortality. There are many manifestations and implications of hypertension during pregnancy, each of which is linked to a particular management and prognosis for the mother and foetus [2].

In the African literature, the frequency of hypertension associated with pregnancy varies from country to country. In Tunisia, the frequency of hypertension associated with pregnancy was 8.2% in Niger, 8.9% in Guinea and 17.05% at the Donka University Hospital [3-5].

A study carried out in Bamako in 2020 found maternal complications dominated by eclampsia in 19% of our patients, Handle Region Peptide (HRP) in 10% of our patients and 1 case of Osteoarticular Pathology (OAP) (0.3%) [5].

Previous studies on maternal complications of gestational hypertension have found an overall incidence of gestational hypertension, but renal complications are rarely evaluated. In this study we evaluate the place of renal failure among the maternal complications of gestational hypertension, with a view to reducing the rate of renal aggression during pregnancy.

Materials and Methods

This is a prospective descriptive study. Our study was conducted in the regional hospital of Kankan, the second largest city in the Republic of Guinea. The Kankan regional hospital is a public institution and the study took place in the maternity ward, which is dedicated to care, training and research.

All pregnant women or women following childbirth with a BP $\geq 140/90$ mmHg were used in our study. For data collection, we used: Prenatal consultation diaries, consultation and hospitalisation registers, medical records, operative report register, vaccination register.

This is a prospective descriptive study which was carried out over a period of six months, from 1st May to 31st October 2023.

We targeted all pregnant women and parturients seen in the department during the study period. The study finally focused on all pregnant women, parturients or women following childbirth with a resting blood pressure $\geq 140/90$ mmHg.

We used the formula for calculating sample size and obtained a minimum sample equal to 70 patients. All pregnant women, parturients and women following childbirth who agreed to answer our questions, regardless of age, origin or clinical picture. Data were collected on individual survey forms. The quantitative study variables were: Frequency, maternal age, blood pressure, biological tests (creatinine, blood urea, uricemia, proteinuria, CBC, platelets, transaminases, bilirubins), the qualitative variables were: Type of arterial hypertension and period of discovery, maternal complications. Each variable was defined to describe the measurement modalities.

A: Frequency to determine the proportion of hypertensive pregnant women in relation to the total number of women hospitalised in the department during the study period.

B: Maternal age the different ages were grouped in to regular 5-year age.

C: Types of hypertension pre-eclampsia, chronic hypertension, added pre-eclampsia, transient gravidic hypertension.

D: Maternal complications:

- Pre-eclampsia: Hypertension, proteinuria appearing after the 20 week of amenorrhoea.
- Eclampsia: Tonic-clonic convulsion during pregnancy or in the post-partum period.
- Retro-placental haematoma: Black discharge.
- Acute renal failure: Creatinine >90 $\mu\text{mol/L}$ with oliguria or preserved diuresis.
- HELLP syndrome: Haemolysis, elevated transaminases, thrombocytopenia.

E: Biological tests: To define the biological modalities relating to one of the complications.

Data entry and analysis were performed using software (Word, Excel) and Epi Info version (7.1.0) 2014. Our results were presented in the form of text and tables, commented on, discussed and compared with current data in the literature.

Results

Epidemiological data

Over all incidence of hypertension in pregnant women. Out of a total of 1,500 patients seen during the study period, we recorded 70 hypertensive pregnant women, representing a frequency of 4.66%.

Maternal age: We divided our patients into 5-year age. Out of a total of 70 patients, the 15-19 age was the most representative, with 23 cases, is a proportion of 32.85%; the mean age of the patients was 24 years, with extremes of 15 and 44 years and a standard deviation of 7 years (**Table 1**).

Table 1: Pregnant women with hypertension by maternal age.

Maternal age	N=70	Percentages
15-19	23	32.85
20-24	21	30
25-29	11	15.71
30-34	9	12.86
35-39	5	7.14
40-44	1	1.43

Clinical data

Among the 70 hypertensive pregnant women, systolic blood pressure was >160 mmHg in 46 cases (65.71%) and diastolic blood pressure was >110 mmHg in 45 cases (64.29%) (**Table 2**).

Table 2: Distribution of hypertensive pregnant women according to blood pressure levels.

Systolic Arterial Pressure (TAS) (mmHg)	N	%	Diastolic Arterial Pressure (TAD) (mmHg)	N	%
<160	24	34.29	<110	25	35.71
>160	46	65.71	>110	45	64.29
Total	70	100	-	70	100

Pregnant women with hypertension were distributed according to the type of hypertension and the period of discovery. Most of them had pre-eclampsia (30 cases) and were discovered after 20 week's amenorrhea (**Table 3**).

Table 3: Distribution of hypertensive pregnant women by type of hypertension and period of discovery.

Period	<20 week's amenorrhea	≥ 20 week's amenorrhea
Type		
Pre-eclampsia	0	30
Chronic hypertension	10	1
Additional pre-eclampsia	0	13
Transient hypertension	0	16

The most frequent complications of hypertension during pregnancy were classified according to high proportions, with acute renal failure in 4th place, with 6 cases, representing a frequency of 8.57% (**Table 4**).

Table 4: Distribution of hypertensive pregnant women according to maternal complications.

Maternal complications	N=70	Percentages
Eclampsia	34	48.57
Pre-eclampsia	18	25.71
HRP	10	14.29
Eclampsia+IRA	6	8.57
Eclampsia+OAP	2	2.86

Discussion

Epidemiological data

This study was to determine the place occupied by acute renal failure among the complications of arterial hypertension during pregnancy. The answer to this question must involve determining the number of hypertensive pregnant women in our context. In our study, there were 70 cases of hypertensive pregnancy, is 4.66%.

This proportion is not negligible, especially in the context of a regional site where medical specialities are rare and this rarity may have consequences for maternal morbidity and mortality.

Our results are questionable in relation to the literature. Doumbia reported that during the study period 5800 pregnant women and parturients consulted the department, 290 of whom had pregnancy-associated hypertension, is a frequency of 5.0% [5].

Toure et al., in Niger recorded 70 hypertensive women out of 784 parturients examined, is a prevalence of 8.9% [4].

Traore et al., at the Nianankoro Fomba hospital in Ségou in 2021 found a frequency of hypertension in pregnant women of 8.01% (283 patients out of 3533 pregnant women) [6].

Houda et al., in Algeria reported that among 742 patients hospitalised in the obstetrics unit of the Centre Hospitalo-Universitaire Tlemcen (CHU-Tlemcen) during the period (03 April to 02 May), only 46 pregnant patients were hypertensive, with a frequency of 6% which is low compared with the overall frequency of pregnancies [7].

Our results are similar to those in the current literature. We divided our patients into 5-year age. Out of a total of 70 patients, the 15-19 age was the most representative with 23 cases, is a proportion of 32.85% the mean age of the patients was 24 years with extremes of 15 and 44 years and a standard deviation of 7 years.

Traore et al., in Ségou in 2020 found that the mean age of patients was 20.65 years, with extremes of 14 and 44 years. The 14 to 19 age group was the most affected, with a frequency of 60.2% [8].

Clinical data

In our study, systolic blood pressure was >160 mmHg in 46 cases, is 65.71% and diastolic blood pressure was >110 mmHg in 45 cases, is 64.29%.

Traore et al., in Ségou in 2020 found that systolic blood pressure was >150 mmHg in 93 cases (52.8%) and diastolic blood pressure was between 90 and 100 mmHg in 107 cases (60.8%) [8].

Our results are similar to those reported in the scientific literature. The most frequent complications of arterial hypertension during pregnancy were classified according to their high proportions, with acute renal failure in 4th place in 6 cases, a frequency of 8.57%.

Traore et al., in Ségou in 2020 found that infectious complications (endometritis and parietal suppuration) were the most frequent maternal complications, accounting for 53.4% of cases. Other complications included acute renal failure in 20% of cases, retroplacental haematoma in 13.3% of cases and delivery haemorrhage in 13.3% [8].

Yassine et al., in Morocco in 2021, had reported concerning maternal complications, they were dominated by retroplacental haematoma (45%), followed by severe pre-eclampsia, which constituted 24% and then eclampsia 13%, HELLP syndrome (Hemolysis, Elevated Liver enzymes, Low Platelets) 6% and finally acute renal failure representing 4% [1].

Our results are superimposable in terms of the maternal complications encountered, although there are remarkable differences in terms of frequency, which could be explained by the difference in sample sizes, but also by the study settings.

Our results have internal validity based on the practical modalities of the variables measured on the one hand and on the comparison of the results obtained with data from the scientific literature on the other. However, the presence of a bias in relation to the hospital study setting influences the external validity of our study, but the results are usable in our local context.

In perspective, this study can be carried out on a large population to reduce the negative impact of hypertension during pregnancy in order to reduce maternal morbidity and mortality and ensure adequate management of hypertension during pregnancy.

Conclusion

Arterial hypertension is a condition that should not be underestimated. The frequency of hospital admissions varies according to the study, the context and the study site the frequency in our study was 4.66%, young patients were the most represented, maternal complications were dominated by eclampsia in 34 cases (48.57%), with acute renal failure in 4th place in 6 cases (8.57%). These complications are at the root of maternal morbidity. A study of a larger population of pregnant women could enable arterial hypertension to be identified during pregnancy, in order to reduce the impact of arterial hypertension and complications in pregnant women.

Ethical Considerations

The confidentiality of the information collected was guaranteed: Patients were informed beforehand and their informed consent was obtained.

Limitations of the Study

The study is limited by the fact that, as it is a hospital study, the data could not be extended to the entire population.

Conflicts of Interest

This manuscript is not the subject of any conflict between the authors and is not submitted to any other journal.

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