Factors associated with the occurrence of the retroplacental hematoma in the departmental maternity hospital of Borgou.

Salifou K[1]*, Obossou AAA[1], Vodouhè M[1], Agbanda LM[1], Sidi R[1], Hounkponou F[1], Atade R[1], Alihonou E[2]

[1]Department of Medicine, UFR of Gynecology and Obstetrics, University of Parakou, Parakou, Benin
[2]Department of Health Sciences, UFR of Gynecology and Obstetrics, University of Abomey-Calavi, Cotonou, Benin

Abstract

Introduction: Among the main causes of maternal death, there is retroplacental hematoma (Retropl. H.) which requires, because of its brutality and its evolving unpredictability, emergency obstetrical care and preventive measures focused on the factors which determine its occurrence.

Objective: Study the factors related to the occurrence of Retropl. H. at the Departmental University Teaching Hospital of Borgou in 2016.

Methods: It was an observational, descriptive and analytical study of Case-control type using a prospective data collection over a period of 8 months from January 2016 to August 2016.

Results: Among the 141 involved in this study, there were 47 cases of retroplacental hematoma and 94 controls. The average age of cases was 29.38 ± 5.61 years and 29. 67 ± 5.34 years in controls. Retropl. H. prevalence was 3.51%. Maternal age (p=0.0000001); OR=2.30 CI 95%[1.90-2.79], parity p=0.00000037, OR 1.79 CI 95%[1.45-2.21]; intercurrent pathology such as preeclampsia (31.95% 95%), HBP (4.26%), p=0.010648 df=5 Chi^2 =14.93; history of preeclampsia (p=0.0458), OR= 2.16, CI 95%[1.86-8.27], Retropl. H. (p=0.0002), OR 3.85 CI 95% [1.81-8.27] and the number of antenatal visits OR=3.33 CI 95%=[1.57; 7.05] p-value=0.0013 are related to the occurrence of Retropl H.

Conclusion: Retropl. H. is relatively frequent at CHUD (Departmental University Teaching Hospital). The factors associated with its occurrence are related to age, personal and family history of medical and obstetrical pathology.

Keywords: Retropl. H., HBP, Related factors, Medical and obstetrical history.

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Introduction

According to the latest global estimates of the World Health Organization (WHO), maternal death ratio has fallen by nearly 44% during the past 25 years, from almost 385 to 216 maternal deaths per 100,000 live births (LB) between 1990 and 2015. Approximately 99% of maternal deaths happened in developing regions [1]. In Benin, from 1990 to 2015 the annual number of maternal deaths hardly declined from 576 to 405 per 100,000 LB indicating insufficient progress according to WHO report in 2015 [1]. Among the main causes of maternal deaths, hemorrhage including retroplacental hematoma (Retropl. H.) during pregnancy and delivery is a large part [2]. Retropl. H. is a paroxysmal accident caused by the premature detachment of a normally implanted placenta (PDNIP). Due to its unpredictability, its brutality and the severity of its prognosis, it exemplifies pathology requiring emergency obstetrical care. It accounts for 3.5% to 7.7% maternal deaths [2,3]. It is proved worldwide that multiparity and advanced maternal age are the main factors underpinning that [4]. To set up an appropriate strategy at local level, there was a need to determine the specific factors which favor the occurrence of Retropl. H. in pregnant women or parturients in Parakou. The purpose of this study is to identify the factors associated with the occurrence of Retropl. H. at Departmental Maternity Hospital of Borgou and Alibori (CHDBA).

Materials and Methods

Study framework

The study was carried out in the gynecology and obstetrics department of the University Teaching Hospital of the departments of Borgou and Alibori which is a second- level referral hospital.

Study method

Type of study and collection period: It is an observational descriptive and analytical study of matched case-control type using prospective data collection over a period of 8 months from January 2016 to August 2016.

Study population

The study population consists of all the pregnant women, cases and controls whose gestational age is greater than or equal to 28 WA and who delivered in the gynecology and obstetrics department of CHUD/B.

Inclusion criteria: All the cases matching the definition of cases and controls:

Definition of cases: A case is defined as a pregnant woman who has had a retroplacental hematoma from 28 WA.

Definition of controls: A pregnant woman who doesn't have a retroplacental hematoma and who is received before and after the case.

Diagnostic criterion: Retropl. H. is diagnosed:

- Either because of a suggestive clinical picture by using SHER classification According to Table 1 [5].
- Or in the case of a cupula or a hematoma on the maternal side of the placenta when after-birth is examined.

Matching criteria: Two controls are matched for each case. The first control is the pregnant woman who has no Retropl. H. and who is received just before the case and the second control is the one who follows the case immediately.

Sampling

Sample size: The sample size is calculated:

- By assuming that: The odd ratio between cases and control is 5.
- A 5% p-value and a 20% second species risk.

Grades		Symptoms
Grade I		Metrorrhagia minimal less than 100 ml unexplained.
		Postpartum retrospective diagnosis of a small hematoma.
Grade II		Average metrorrhagia to 500 ml.
		Uterine hypertonia.
		Living fetus.
Grade III	Grade III a	Abundant metrorrhagia greater than 500 ml.
		Complete symptomatology.
		With fetal death in-utero.
		Without bleeding disorders.
	Grade III b	Complete symptomatology.
		With fetal death in-utero.
		With bleeding disorder.

Table 1. *SHER classification.*

Demography	Cases=47		Controls=94		p	OR-CI
Age	**N**	**%**	**N**	**%**		
≤ 30 years	11	22.66	60	63.82	0.0000001	2.30 [1.90-2.79]
>30 years	36	77.34	34	36.18		
Parity						
Primipara	9	19.14	23	24.46	0.00000037	1.79 [1.45-2.21]
Paucipara	10	21.29	37	41.87		
Multipara	17	36.14	22	23.17		
G. Multipara	11	23.40	12	10.54		

Table 2. *Sociodemographic factors.*

Distribution	Cases=47		Controls=94		p-value	OR-CI
	N	%	N	%		
EP						[95%]
Yes	0	0	0	2.13	0.3138	
No	47	100	92	97.87		
Abortion						1.96 [0.91; 4.24]
Spontaneous	14	29.78	32	34.04	0.8734	
Induced	2	4.26	4	4.26		
No abortion	31	65.96	58	61.70)		
Preeclampsia						2.16 [1.01; 4.62]
Yes	18	38.30 21		22.34	0.0458	
No	29	61.70	73	77.66		
Retropl H						3.85 [1.86; 8.27]
Yes	25	53.19	21	22,34	0.0002	
No	22	46.81	73	77.66		
FDIU						0.66 [0.06; 0.52]
Yes	1	2.13	3	3.19	0.7198	
No	46	97.87	91	96.81		
Where, EP: Ectopic Pregnancy FDIU: Fetal Death in Utero.						

Table 3. *Distribution of pregnant women according to history of gynecological and obstetrical pathology.*

- Two controls per case.
- And p=proportion of subjects exposed in cases=80%.
- p=proportion of cases exposed=10% - p0=proportion of controls exposed.
- c=number of controls per case – Zα =1.96–Zβ =0.84

$N=[p(1-p)\ (1+1/c)\ (Z\alpha + Z\beta)^2]/\ (p^0-p^1)$

The sample size is 156 with 52 cases per 104 controls.

Sampling technique: Selection of cases: It is a non-probability sampling. All pregnant women meeting the selection criteria and who were received during the collection period were included in the study.

Selection of controls: For each case two controls were associated. They were delivered women received before or immediately after the cases and they hadn't had Retropl. H.

Data collection: The two techniques were used: Documentary review (admissions and delivery registers, operative protocol) and direct surveyor-surveyed interview by using a collection sheet previously tested.

Variables studied: The dependent variable is the occurrence of Retropl. H. It is a qualitative binary variable. Independent variables: pregnant women's age, parity, ethnic groups (The Bariba, Dendi, and Fon ethnic groups are in order of importance most found in Parakou), marital status, socioprofessional status, ethniascendants' medical history, gynecology and obstetrics history, intercurrent pathology, antenatal monitoring (number of ANC).

Data processing and analysis

A double entry of data was carried out in the Epi Data software 3.1.1. The data collected are analyzed by using the Epi Info Software 7.2.0. Word processing was performed by using Microsoft and Excel 2013 version. The Student t test or the analysis of variances are used to compare averages. Khi² statistical tests were used to identify factors related to Retropl. H. The significance level is p<5%.

Ethical considerations

The work is done in accordance with current ethical standards relating to health research in the Republic of Benin. In order to achieve this, administrative authorities of CHUD/B are informed of the study and they have given their support as well as cases and controls.

Limitations and constraints of the study

The limitations of this study lie in the fact that we registered 47 cases of Retropl. H. instead of 51 cases expected in the sample size. It was especially about difficulties linked to the identification of controls. In fact, according to the study method,

Distribution	Cases=47		Controls=94		p-Value	Chi²
	N	%	N	%		
Father						
HBP	23	48.94	13	13.83	0.00008	21.34
Diabetes	3	6.38	5	5.32		
HBP + Diabetes	1	2.12	2	2.13		
No history	20	42.55	74	78.72		
Mother						
HBP	13	27.65	17	18.08	0.016632	12.09
Diabetes	6	12.77	5	5.32		
HBP + Diabetes	3	6.38	0	0		
Others	2	4.26	5	5.32		
No history	23	48.94	67	71.28		

Table 4. *Distribution of pregnant women according to ascendants' medical history.*

Number of ANC	Cases		Controls	
	N	%	N	%
<4 ANC	23	48.94	21	22.34
>4 ANC	24	51.26	73	77.66
Where, OR=3.33 CI95%=[1.57; 7.05] Chi²= 10.32 p-value=0.0013				

Table 5. *Distribution of pregnant women according to the monitoring of the current pregnancy.*

Pathology	Cases=47		Controls=94	
	N	%	N	%
HBP	15	31.91	7	7.45
Diabetes	2	4.26	5	5.32
Asthma	1	2.13	3	3.19
VIH	1	2.13	4	4.26
Others	1	2.13	6	6.38
No pathology	27	57.44	69	73.40
Where, Chi²=4.93, p=0.010648, ddl=5.				

Table 6. *Distribution of pregnant women according to pathology associated with pregnancy.*

the control is to be found before and after the case according to admissions.

Results

Incidence of Retropl. H.

During the study period, the total number of deliveries was 1340. Retroplacental hematoma (Retropl. H.) was diagnosed in 47 pregnant women. The incidence of Retropl. H. was 3.51% that is to say approximately one case of Retropl. H. per 30 deliveries.

Sociodemographic characteristics of the surveyed

Our patients' average age was 29.38 ± 5.61 with extremes of 18 and 40 years as against 25. 67 ± 3.34 years with extremes of 15 and 40 years for controls. In the two groups (cases/controls) Bariba ethnic groups (25.53%/37.24%) and Dendi (23.40%/21.28%) predominate followed by Fon and their kindred ethnic groups (14.90%/24.47%). The average parity according to cases/controls was respectively 3/1. Multiparas and grand multiparas represented 59.54% of Retropl. H. cases, whereas in controls they represented 30.71% of patients. They were housewives in the proportions of 63.83% for cases and 67.02% for controls. They mainly had primary level (39.6%) and secondary level (27.7%). They lived with partners in 92.9% of cases as against 89.5% for controls.

Factors associated with retroplacental hematoma

Factors associated with the occurrence of Retropl. H. in this study were sociodemographic factors (Table 2); factors related to:gynecological and obstetrical history (Table 3), family history (Table 4), pregnancy monitoring (Table 5) and pathology associated with the pregnancy (Table 6).

The study of pregnant women with Retropl. H. revealed that personal history of preeclampsia and Retropl. H. were related to the onset of Retropl. H. (Table 3). Table 4 reveals that family history of medical pathology of HBP or diabetes type in the father or the mother were associated with the occurrence of Retroplacenta Hematoma.

The average number of ANC per pregnant woman was 4.22 ± 1.83. The minimum was 0 and the maximum was 9. Distribution of Retropl. H. cases according to pregnancy monitoring is in Table 5. The risk of the onset of Retropl. H. is 3 times higher in pregnant women with fewer than 4 ANC. p=0.001313. (Table 4). Intercurrent pathology like HBP and Diabetes are associated with the onset of retroplacental hematoma (Table 6).

Discussion

The incidence of Retropl. H. was 3.51% that is to say one Retropl. H. per 30 deliveries. The incidence ranges from 1.9% to 6.05% in African countries [1,6-8]. In Europe, Gueneuc et al. [8] reported an incidence of 0.78%. This variable incidence is related to the quality of the monitoring of the hypertensive disease during pregnancy which allows screening and early management of complications.

The average age of the occurrence of Retropl. H. is 29.38 ± 5.61 years in Parakou. Patients aged more than 30 years were the most affected. Similarly, in several studies patients who were more than 35 years old were more affected by this obstetrical accident. This Retropl. H. predominance in these patients seems associated with the situation in which pregnancy occurs since the history of HBP and diabetes is found in this age group.

Multiparas represented 59.54% of Retropl. H. cases followed by pauciparas 21.29% and primiparas 19.14% as against respectively 23.71%, 41.87%, 24.46% in controls:p= 0.00000037; OR CI 79 [1.45-2.21]. Work carried out in Senegal [2,9] and in France [3], shows the predominance of multiparas in similar proportions in Retropl. H. victims and sometimes in bigger proportions ranging from 25.1% to 58% [7,10]. Therefore, parity is a factor associated with the occurrence of Retropl. H. as illustrated in this study.

The family history of HBP and diabetes proved to be factors associated with the occurrence of Retropl. H. related to the hypertensive disease developed during pregnancy. Several studies showed that HBP in the father and or the mother exposes the child therefore the future mother to the risk of HBP. Similarly, inherited diabetes can in the long run have deleterious effects on the cardiovascular system leading to a PIH and its complications including Retropl. H. Thus, a history of preeclampsia was found in 38.30% of Retropl. H. cases as against 22.34% in controls (p=0.0458 OR CI 2.16 [1.01;4.62]). Similar proportions of history of HBP associated with pregnancy were found in Ousmane's series [7] 37%, and Ngoué [11] 29.31%. For Kathéryne, the risk of making an abruption hematoma in cases of preeclampsia varies from 1.9 to 5 in a meta-analysis [10]. Predominantly, Retropl. H. occurs on a background of hypertensive disease. Basically, there was a vascular alteration due to a lack of placentation characterized by an alteration of trophoblastic invasion of spiral arteries [8]. The initial phenomenon would be a spasm of basal arterioles from spiral arteries which irrigate the placental decidua. The interruption of blood flow is short, and it doesn't cause intravascular thrombosis. When spasm is relaxed, blood flow under pressure breaks vascular walls and causes tissue damage at basal plate level [8]. That favors the liberation of thromboplastin, abundantly contained in the decidua, a liberation increased by uterine hypertonia. This results in much fibrin and blood clotting located in the utero-placental zone: Retropl. H. is formed [11,12].

Similarly, the history of Retropl. H. appears as a risk factor of the disease in this study. The recurrence risk being multiplied by 3.95 in case of a history of Retropl. H. According to Mezane [13], women who have already had a picture of Retropl. H. would have 10% chance of being diagnosed with Retropl. H. again.

In this study, Bariba women were more affected by retroplacental hematoma than other ethnic groups with a statistically significant difference. Genetic and immunological factors reported in the literature could explain this difference [5,10].

For Gueneuc et al. [3] in 2016, a history of Retropl. H. increases the risk of similar accident 10 to 25 times. Sananes [14], Rasmussen [15] and Boisramé [16] propose monitoring. However, the procedure for this monitoring is not consensual yet [15].

Drawing on the number of ANC, weak monitoring of pregnancy is associated with the occurrence of Retropl. H. In this study,

48.94% of pregnant women with Retropl. H. had fewer than 4 ANC as against 22.34% in controls with a statistically significant difference: p=0.0013. The major part of authors acknowledge that the incidence of Retropl. H tends to decline as the number of ANC increases and weak antenatal monitoring is a factor that predisposes to Retropl. H [6]. Antenatal monitoring by allowing to screen high-risk pregnancies and proper management as early as possible will avoid the occurrence of complications and reduce maternal and fetal morbidity at maximum as well as mortality. The low socioeconomic level, the lack of education which characterize our pregnant women could partly account for weak monitoring and few preventive measures during pregnancy.

Conclusion

The incidence of Retropl. H. at CHUD-Borgou is 3.51% that is to say 1 case per 30 deliveries. Factors associated with its occurrence are related to age, personal and family history of medical and obstetrical pathology. In any pregnant woman during ANC, these factors must be sought in order to take specific preventive measures for them so as to improve prognosis.

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***Correspondence to:**

Salifou K, Head of Teaching and Research Unit
Department of Medicine
UFR of Gynecology and Obstetrics
University of Parakou
Borgou, Benin
Tel: 229 94794145
E-mail: salifoukabibou@gmail.com