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Placenta Previa: Factors Associated and Prognosis in The Maternity Ward of Borgou UHC

Salifou K*, Vodouhe M, Obossou A, Kitcho C, Hounkponou F and Sidi Imorou R

Department of Gynecology and Obstetrics, Faculty of Medicine Parakou (Benin).

***Correspondence:**
Salifou Kabibou, Associate Professor, Gynecology and Obstetrics, Faculty of Medicine, BP 123 Parakou - Benin, Tel: 22966425232.

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ABSTRACT

In Africa, despite the systematic practice of ultrasound during pregnancy, placenta previa (PP) is still a high risk and very unpredictable gestational complication with a high fatality rate.

***Goal:** To determine the factors associated and prognosis of placenta previa (PP).*

***Materials and Method:** It was a retrospective and case-control study on PP at the maternity ward of Borgou UHC, over a period of 2 years from January 1st, 2016 to December 31st, 2017. We have included expectant mothers who had a gestational age ≥28 weeks of amenorrhea for whom the diagnosis of PP had been established.*

***Results:** The frequency of PP in our survey was 1.08 %. The factors associated were maternal age ≥30 years in 34.4% of cases against 17.3% in the control group (p=0.039). Multiparity (50.0% vs 28.9% p=0.008), multigravidity (54.6% vs 31.2% p=0.001) and a prior history of cesarean section (32% vs 11%, p=0.00). Factors associated with morbidity among neonates in a context of placenta previa were prematurity (51.6 % vs 24.2% in the control group p=0.000), low birth weight (50% vs 16.4% p=0.000), resuscitation (31.3% vs 4.7% p=0.000), neonatal distress (32.81% vs 5.2% p=0.000) and neonatal infection (6.25% vs 0% p=0.050). The perinatal mortality was higher in case of placenta previa (26.6% versus 3 % in the control group; p=0.000). Maternal morbidity was marked by anemia (50%), state of shock (25.5%), PPH (11.8%), bleeding disorders (7.8%), parietal suppuration (2%). Maternal mortality was high (1.6%).*

***Conclusion:** PP prevalence is high in Parakou, and it's associated to a high maternal and perinatal morbidity and mortality. Some factors are associated to that pathology and its prognosis. Those factors should be taken into account for its management.*

Keywords

Pregnancy, Factors associated, Placenta Previa, Parakou, Prognosis.

Introduction

Placenta previa (PP) is a partial or whole insertion of the placenta in the lower uterine segment. It's one of the main causes of haemorrhage during pregnancy and responsible of an important perinatal morbidity and mortality.

The worldwide global prevalence is 0.52% and 0.27% in Sub-Saharan Africa [1]. Despite the systematic practice of ultrasound which allows the diagnosis and early management, it's still a high risk and unpredictable complication during pregnancy in developing countries [2]. For most of expectant mothers, that mean of diagnosis is not accessible and it's during labor that the hemorrhage reveals the placenta previa (PP). Its increasing frequency, the coexistence of many risk factors in our expectant mothers, difficulties in accessing ultrasound during pregnancy monitoring in our conditions contribute to worsen maternal and fetal prognosis. The knowledge of risk factors associated with placenta previa could allow better clinical focus and a PP screening for an early management. It is in this perspective that this study is conducted and aims to determine factors associated and the

prognosis of PP.

Materials and Methods

Type of study and collection period

It was a case-control study with analytical purposes conducted from January 1st, 2016 to December 31st, 2017.

Study population

It consisted of all the expectant mothers admitted in the maternity ward at Borgou UHC in 2016 and 2017.

Criteria for inclusion

Are included in our study

Cases: Expectant mothers and parturients for whom the diagnosis of placenta previa is clinically established and/or by using an ultrasound after 28 weeks of amenorrhea regardless of the pregnancy outcome.

Controls: Expectants mothers and parturients for whom the diagnosis of placenta previa is established clinically or by using ultrasound after 28 weeks of amenorrhea regardless of the pregnancy outcome.

Criteria for exclusion

Were excluded from our study, expectant mothers with lower insertion of placenta before 28 weeks of amenorrhea, any case of placenta previa that gave birth outside Borgou UHC or that had not usable medical records.

Diagnostic criteria

Clinically, the diagnosis is established during labor when a part of the placenta is perceived by a vaginal touch in the cervical dilatation area or when after the childbirth, the delivery is made by DUNCAN mode. As for the ultrasound, the diagnosis is established using BESSIS scale.

Matching criteria

For a case of PP, we associate two women who didn't suffer from PP respectively admitted before and after the case.

Sampling

Sample size: It was an exhaustive sample. All the cases were registered as they were admitted.

Data collection

Source of information: Admission, childbirth and operative report registers, medical record of patients and neonates were used.

Collection technique

Data were provided by patients' medical records using a pre-tested data processing form established for that purpose.

Variables

Dependent variable: Dependent variable was the presence of placenta previa. It's a binary and qualitative variable with the modalities yes/no.

Independent variables

Socio-demographic variables: age, religion, socio-professional group, parity, gestity, history of cesarean section and placenta previa.

Variables in relation to: medical, surgical, gynecological and obstetrical histories.

Variables relating to the prognosis: complications; maternal complication; foetal complication.

Data processing and analysis

Data collected were recorded with the software EPI Data 3.1. Analysis was made using the softwares EPI INFO 7.1 and SPSS version 2.0. Microsoft Excel 2016 was used to organise data in the form of tables and graphs. Quantitative variables have been expressed as mean values with standard deviations. For the crossover of two qualitative variables or the comparison of percentages, chi-square (or Fisher's exact test as the case may be) and p-value were used. Association was considered as statistically significant between two variables for a probability under 5%.

Results

In this study, 64 cases of placenta previa have been recruited for a total of 5893 childbirths. The frequency of placenta previa was 1.08%. Most of the women were housewives and married (57.8% vs 49%; p= 0.005). The mean age of PP cases was 29.09 ± 5.70 years against 26.06 ± 4.87 years for control patients. The age range 30 to 35 years was the most affected by PP with a difference statistically significant. Placenta previa was most encountered in patients with gestity and parity beyond 4. There was more caesarean section in case patients' medical history in comparison with the one of control patients (32% versus 11%) (Table 1).

		Placenta previa					
		Case = 64		Control = 128		Ki^2	P-Value
		Effectif	%	effectif	%		
Age	<20	5	7.8	19	14.8	10.08	0.039
	20-25	14	21.9	46	35.9		
	25-30	23	35.9	41	32.0		
	30-35	17	26.6	17	13.3		
	≥ 35	5	7.8	5	4.0		
Gestity	1	12	18.8	32	25.0	27.41	0.001
	2-3	17	26.6	56	43.8		
	4	10	15.6	22	17.2		
	>4	25	39	18	14		
Parity	0	12	18.8	36	28.1	22.29	0.008
	1	6	9.4	26	20.3		
	2	14	21.8	29	22.7		
	≥3	32	50.0	37	28.9		
Surgical history	Cesarean section	30	32	1	11		0.000
	Other surgeries			1	0.8		
Regularity of menstrual cycle	Regular	46	71.9	108	84.4	4.19	0.040
	Irregular	18	28.1	20	15.6		

Table 1: Distribution of case and control patients by age, parity and medical history.

As for the prognosis, maternal complications were 78.1% in PP group against 5.4% in the control group. Maternal mortality in our study was 1.6% against 0% (Case versus control patients). Anemia (50%) followed by state of shock (25.5%), bleeding disorders and parietal suppuration were the predominant complications in PP group. 26.6% of neonatal mortality was registered in case of PP against 3% in the control group. The complications observed: low birth weight followed by immediate neonatal distress (IND), neonatal infection and neonatal resuscitation in PP group were 31.3% against 4.7% in control group (Table 2).

		Complications				Ki²	P-Value
		Cases = 64		Control = 128			
		Effectif	%	Effectif	%		
Maternal complications	Anemia	25	38.1	5	3.9	111.38	0.000
	Hysterectomy	0	0.0	1	0.8		
	Parietal suppuration	1	1.6	0	0.0		
	State of shock	13	20.31	0	0.0		
	PPH	6	9.37	1	0.8		
	Coagulopathy	4	6.25	0	0.0		
	Other	1	1.6	0	0.0		
Fetal complications	Prematurity	33	51.6	31	24.2	24.73	0.000
	Low birth weight	32	50	21	16.4	27.29	0.000
	IND	21	32.81	3	5.2		0.000
	Neonatal death	17	26.6	4	3		0.000
	RPH	9	14.1	0	0		0.000

Table 2: Distribution of case and control patients by maternal and fetal complications.

Factors that lead to complications were the clinical expression of PP (metrorrhagia, state of shock), cesarean section and poor pregnancy follow-up (Table 3).

		Maternal Complications		Ki²	P-Value
		YES	NO		
Symptoms associated	Metrorrhagia	51 (76.1)	16 (23.9)	7.25	0.007
	Without metrorrhagia	13 (10.4)	112(89.6)		
	State of shock	11 (61.1)	7(38.9)		
	Without State of shock	47 (27.3)	125 (72.7)		
Mode of delivery	Cesarean	20 (95.3)	01 (4.7)	21.38	0.000
	Vaginal delivery	44(29.1)	107 (70.9)		
Number of RPNC	< 4	38 (30.4)	87 (69.6)	12.52	0.000
	≥ 4	26 (38.8)	41 (61.2)		

Table 3: Factors associated with maternal complications.

As for perinatal mortality, the incriminated factors were prematurity, hemorrhage and poor pregnancy follow-up (Table 4).

	Placenta paevia				Ki-Square	p-value
	Cases	%	Controls			
Placenta previa						
	Cases = 64		Control = 128			
	Effectif	%	Effectif	%	Ki2	P-value
Symptoms associated					11.92	0.001
Metrorrhagia	16	94.1	0	0.0		
Without metrorrhagia	1	5.9	2	100		
Mode of delivery					0.35	0.534
Cesarean	12	70.6	1	50		
Vaginal delivery	5	29.4	1	50		
Number of RPNC						0.002
< 4	16	94.1	1	50		
≥ 4	1	5.9	1	50		
Prematurity					0.02	0.001
Yes	12	70.6	1	50		
No	5	29.4	1	50		

Table 4: Factors associated with prenatal death.

Discussion

The frequency of placenta previa in our study was 1.08%. That result is higher than the one found by Jing et al in China in 2018 who reported 0.93% and lower than the results of N'guessan et al in 2007 at 1.6% in Ivory Coast [3,4]. In a meta-analysis Cresswell et al. have reported a global frequency at 0.52% with regional variations respectively at 1.22 %, 0.36%, 0.29% and 0.27% in Asia, Europe, America and in Africa [1]. The variation in the criteria of inclusion and diagnosis could partially explain that difference of frequency and the characteristics of the study population should be taken into account. In our study, the maternal age group 30 to 35 years seems a factor associated with the onset of PP (Case versus Control: 26.6 versus 13.3; P = 0.039) like Soraya et al. who had found that the mean age 29.9 years ± 6.1 years were related to PP onset [5]. According to Raees et al., patients aged 30 years were the most affected by PP with a proportion of 38% in their cohort [6]. The frequent alterations of endometrium in our context are factors that lead to PP in women older than 30 years. In this regard, the uterine scar due to the cesarean section appeared as a factor associated with placenta previa because of its probable harmful influence on womb's mucous membrane like revealed by N'guessan et al. in Ivory Coast and Ahmed et al in Egypt [4,7]. Furthermore, it has been demonstrated that the risk of PP is proportional to the number of cesarean sections moving from the risk 4.5 for one scar to 44.9 for the fourth one [8]. Multiparity and multigestity also lead to PP through the same mechanism of womb's mucous membrane alteration. In fact, in this study, multiparity and multigestity are associated with PP. The same observation is made by other authors in Iran and Tanzania [5,9]. According to the pathogenicity, the increased risk of placenta previa in multigravida women could be explained by the degenerative change in the uterine vascular system, leading to the drop in the placenta infusion responsible

of compensatory extension of the placenta insertion in order to improve its blood flow [8].

As for the prognosis, PP seems a risk factor of complications during pregnancy and childbirth. The complications associated were anemia, post-partum hemorrhage (PPH), and coagulopathy. The association between PP and complications in expectant mothers and post-partum women has been reported with different proportions by other studies [7,10-11]. The precarious nutrition in our non-pregnant women, the delay in diagnosis and lack of labile blood products are the reason why anemia is predominant in our survey.

According to Onwere, post-partum hemorrhage (PPH) was the first maternal complication associated with PP. Hysterectomy is reported with a low proportion [10]. None case of hysterectomy has been noted in our study. The lethality of PP at 1.6% is similar to the one found by N'guessan et al. in Ivory Coast [4], whereas in developed countries, no maternal death due to PP is recorded [9,12,13]. That difference is due to poor anticipation in management of obstetrical emergencies in developing countries and particularly in Benin.

The rate of perinatal mortality was 26.6% among cases against 1.6% in control patients. That rate is clearly higher than the ones reported by Yael et al in 2017 and Hassan et al in 2016 [10,13]. That's the result of some fetal complications such as prematurity (76.4%) and low birth weight (70.6%); in relation with determinant factors of maternal complications such as: metrorrhagia during pregnancy, mode of delivery and the poor pregnancy follow-up. In a more specific manner, prematurity is the main factor of low birth weight.

In the study of Neema et al., all the children who died had a weight under 2500g and were premature [15]. Yael et al in 2017 and Neema et al. in 2015 reached the same results [10,15].

Conclusion

The prevalence of placenta previa is relatively frequent in Borgou Departmental University Hospital Center. Factors associated with placenta previa were advanced maternal age, multigestity, multiparity and history of cesarean section. Factors associated with maternal and fetal complications are metrorrhagia during pregnancy, caesarean section and poor pregnancy follow-up. To those prognostic factors, we can add prematurity as a specific factor associated to low birth weight. Those different factors taking into account should improve the management of that obstetrical emergency for a greater survival of both mother and child to PP.

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