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Placental Malaria in Newly Delivered Women in the Maternity Hospital of Chud Borgou in 2015

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Abstract

Introduction: Malaria remains a major public health issue in sub-Saharan Africa with high mortality in pregnant women and newborn infants. In the latter, malaria is the consequence of placental transmission of plasmodium. This study aims at identifying the factors associated with placental malaria in CHUD/B in 2015.

Patients and Method: It was a prospective, descriptive and cross-sectional study with an analytical purpose in the CHUD/Borgou Gynecology and Obstetrics department in Parakou. The study population consisted of pregnant women admitted in the Gynecology and Obstetrics department. It was an exhaustive census of all pregnant women admitted in the CHUD/B Gynecology and Obstetrics department.

Results: Placental malaria was diagnosed in 57 pregnant women that is to say a prevalence of 20.28%. The average age of the mothers was 26 ± 6.02 years with extremes of 16 and 51 years. They were housewives in 27% of cases and 33.1% among them were not educated. The factors associated with the occurrence of the infection were the non-use of LLIN (Long Lasting Insecticidal Nets) and fever in the 3rd quarter of pregnancy with respectively p-value of 0.0490 and 0.0388.

Conclusion: Placental malaria, an intermediate step in neonatal infection is common in Parakou and LLIN remains the most effective means of prevention in our context.

Keywords: Placental malaria; Pregnant women; Parakou; Long lasting insecticidal nets

Introduction

Every year, malaria causes about 2,500 deaths of pregnant women and affects around 200,000 to 300,000 newborn infants who suffer from consequences such as death in utero, hypotrophy or congenital malaria [1].

According to the WHO estimates in 2013, fifteen million pregnant women did not receive any dose of preventive intermittent treatment which constitutes one of the vital links of the prevention of this disease during pregnancy [2].

Congenital malaria defined by the presence of asexual forms of the parasite in the newborn infant's peripheral blood in the first seven days of life is secondary to transplacental transmission of plasmodium [3]. Hence, congenital malaria being common in Parakou testifies to the limits of malaria prevention in pregnant women in Benin. Therefore, it was appropriate to start a study on placental malaria whose objective was to identify the factors associated with it.

Method

It was a prospective, descriptive, cross-sectional study with an analytical purpose carried out in the gynecology and obstetrics department of CHUD/Borgou. The study covered the period from April to July 2015. The study population consisted of pregnant women admitted in gynecology and obstetrics department of CHUD/B.

Sampling was exhaustive. All the pregnant women who gave their written informed consent and admitted in the CHUD-Borgou Gynecology and Obstetrics department were involved in the study. All pregnant HIV-infected women were not included in the study. The main variable was placental malaria defined by thick smear and parasite density (TS and PD) or positive Rapid Diagnostic Test (RDT) on the placenta blood.

The independent variables were socio-demographic and clinical variables of the mother. Data collection was carried out with a form drawn up and pre-tested. They were obtained after interviews and at the end of the clinical examination. Data were entered and analyzed with the Epi info version7 software. Qualitative data were expressed as a percentage and quantitative ones as an average with standard deviation. The difference was significant with a p-value less than 5%.

Results

Description of the population

For the 281 newly delivered women surveyed, the average age was 26 ± 6.02 years with extremes of 16 and 51 years. The age group between 20 and 30 years was the most represented. More than 3 newly delivered women out of 4 (76.6%) were under 30 years old. They were housewives in 27% of cases and in 33.1% they were not educated.

Clinical features

During pregnancy, 91.8% had declared that they used the Long-Lasting Insecticidal Net (LLIN) (Table 1).

Incidence of placental malaria

In the study, out of the 281 mothers, 57 were suffering from placental malaria that is to say 20.28%.

Incidence and factors associated with the occurrence of placental malaria

Out of the 281 surveyed during the study period, 57 suffered from placental malaria that is to say 20.28%. The pregnant women's age, the level of education, PNC, the use of SP were the characteristics which were not statistically associated with the occurrence of placental malaria with respectively p-values of 0.6436, 0.3109, 0.7050 and 0.2453.

However, the use of LLIN and fever in the 3rd quarter are (Table 2).

	Number	Percentage (%)
PNC		
0	9	3.2
1-3	87	31
≥ 4	185	65.8
IPT-p/SP		
0	40	14.2
1	72	25.6
≥ 2	169	60.1
Fever in the 3rd quarter		
Yes	67	23.8
No	214	71.3

Table 1: Distribution of the pregnant women according to clinical features in CHUD/B in 2015.

Occurrence Of Placental Malaria	Total	N	Percentage (%)	PR	p
Age					
<20	60	16	26.67	1	0.6436
20-29	140	25	17.86	0.67	
30-39	75	15	20	0.75	
≥ 40	6	1	16.67	0.62	
Level of education					
Not educated	103	25	24.27	1	0 .3109
Primary	75	14	20.59	0.85	
Secondary	82	16	19.51	0.8	
Higher education	21	2	9.52	0.39	
PNC					
No	12	6	50	1	0.705
Yes	269	51	19	0.38	
Use of SP					
No	42	12	28.57	1	0.2453
Yes	239	45	18.83	0.66	

Fever in the 3rd quarter					
No	106	23	21.7	1	0.049
Yes	175	34	19.43	0.89	
Use of LLIN					
No	23	7	30.43	1	0.0388
Yes	258	50	19.38	0.64	

Table 2: Relation between the occurrence of placental malaria in pregnant women and the socio-demographic and clinical features in CHUD/B in 2015.

Discussion

This descriptive, analytical and cross-sectional study was carried out over a short period of the year, which does not permit to have a sufficient population size for a better conclusion. Nevertheless, it was done according to an exhaustive census on a prospective basis to limit selection bias so as to ensure the representativeness of the study sample. It has especially the merit of dealing with a health issue which continues to expand within communities.

In this study, two pregnant women out of ten had placental malaria (20.28%). This incidence is similar to that of a study in Congo in 2006 (21%) [4]. Famanta et al. in Mali in 2011 reported an incidence below ours (1.6%) [5]. This variation in placental malaria can be accounted for the large variation in the climate from a region to another of the African continent and within a region by the distinction of areas of high transmission from those of low transmission. Moreover, the difference in the approaches to malaria prevention in pregnant women is another cause. As a matter of fact if the WHO guidelines regarding malaria prevention in pregnant women are followed in both sides, there are special features in the association of strategies according to countries: preference given to free distribution of mosquito nets rather than sale, 2 courses of chemoprophylaxis with sulfadoxine-pyrimethamine in some countries and more in others. Furthermore, The IEC/BCC aspect more or less neglected can contribute to this large variation of frequencies of placental malaria in Africa. These different considerations can also account for the various factors which determine placental malaria in Parakou. So, the pregnant women's age, the level of education, PNC and the use of SP were not significantly associated with placental malaria in the surveyed.

However, fever in the 3rd quarter was significantly related to the occurrence of the infection. The same is true for the non-use of LLIN. For the latter factor, it should be noted that in 91% of cases, the surveyed had LLINs they were given for nothing during prenatal consultations according to the prevailing national policy to fight malaria in pregnant women in Benin. The positive impact of the use of LLIN by pregnant women was reported in 2011 with a considerable decrease in the proportion of infected parturient women [6]. In addition, a study carried out in Yaoundé in 2016 by Essiben had shown that the non-use of LLIN by pregnant women was a predictive factor of the failure of IPT/SP causing then the occurrence of the infection in the latter [7]. Moreover, it was found that the use of prevention means reduces the risk of the occurrence of the infection by cancelling the parity effect in all the pregnant women [8,9].

In some studies, the improper use of the LLIN could account for the ineffectiveness of this means of prevention [10,11]. The same is true for various strategies to make LLIN accessible: free distribution being made furtively without information base. In Côte d'Ivoire for example, in a study carried out by anthropologists to explain the low use of LLIN, it is mentioned the sizeable gap between the understanding of malaria which underpins the whole policy of mosquito promotion (the linkage mosquito-malaria) and that of populations who seem to give priority to causes such as the sun and fatigue due to work [10]. Furthermore, The LLIN in itself could not be effective if it was not supported by other strategies such as environmental sanitation, chemoprophylaxis and IEC/BCC. In Mali, Dicko found that the combination of IPT and the use of LLIN contribute to malaria prevention in areas of low LLIN coverage for pregnant women and children under 5 years [11]. These outcomes suggest that on the one hand the surveyed in Parakou have a low level of knowledge of PNC and IPT-SP and that promotion for heath is still insufficient in support of our different strategies. Once more there is the issue of the quality of the actions we take. In the current context of neglect of malaria prevention measures by our pregnant women, education for health through IEC/BCC sessions must be the basis of all our strategies. Mentioning negligence both refers to little knowledge of the disease and its etiology, and to a singular perception of the usefulness of the prevention tool and its relation between the disease and its cause [12,13].

Professional Ethics Considerations

This study was conducted after receiving written authorizations from the Director of CHUD-Borgou and the head of the Gynecology and Obstetrics department. We were given the free written informed consent of the pregnant women before their participation. Confidentiality was ensured.

Conclusion

One pregnant woman out of ten had placental malaria during her pregnancy in the CHUD/B Gynecology and Obstetrics department in 2015. It appears that the incidence of placental malaria is lower when LLIN is used. In Benin, the policy of free distribution of LLIN is worth being pursued and its bedrock should be good information on its use.

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