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Epidemiological Study of Malaria in the Neonatal Period Reference Hospital of Sibiti Department of Lekoumou Republic of Coongo Brazzaville

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Abstract **Original Research Article**

Malaria remains a rare condition in newborns, even in endemic areas, meaning that its search is not too systematic at this age. Our study aims to describe the profile of malaria during the neonatal period. The retrospective descriptive study focused on the files of newborns hospitalized from 12/01/2023 to 06/1/2024, in the pediatrics and neonatology department of the Sibiti reference hospital in the department of lekoumou in Congo Brazzaville. Inclusion criteria were fever, isolated or not, and a positive thick film/blood smear (GE/FS). The exclusion criterion was the positivity of the biological infection assessment. The parameters studied took into account epidemiology, clinical, biology and therapeutics. Results: The prevalence of neonatal malaria was 0.05% (22/398) according to our study. Apart from fever which was an inclusion criterion, pallor was the dominant symptom. Three of our patients had a history of blood transfusion and 2 of these had severe postnatal malaria, with increased parasitemia.

Keywords: Newborn, Malaria, Hospital, Congo Brazzaville, Lekoumou Department.

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INTRODUCTION

Malaria is a major parasitic endemic in tropical areas. He is observed infrequently during the neonatal period, even in generally endemic areas, thanks to the protection provided by antibodies transmitted by the mother to the newborn [1]. All the clinical and biological manifestations concomitant with the presence of Plasmodium in the newborn, generally from D0 to D28 of life, determine neonatal malaria.

The different mechanisms of contamination in the newborn make it possible to describe two main clinical forms [2]:

- Congenital malaria, due to the transplacental passage of parasitized red blood cells, from mother to child. Presenting in 2 forms, one latent or congenital malaria infestation, the other patent or congenital malaria disease;
- Postnatal malaria, following the bite of the female Anopheles mosquito or by blood transfusion, as in infants and older children.

The non-specific clinical symptomatology, simulates a picture of neonatal infection, makes the diagnosis difficult. Often associated with the rarity of the condition, the diagnosis is often obscured. The search for malaria by practitioners during the neonatal period is therefore not systematic.

Therapeutically, the molecules available do not have a specific or adapted dosage for the newborn. The treatment therefore results an adaptation of doses.

This study was carried out with the aim of describing the epidemiological aspects, Clinical, biological and therapeutic aspects of malaria during the neonatal period in endemic areas.

PATIENTS AND METHODS

The retrospective descriptive study was carried out in the pediatrics department and the management of neonatology patients at the Sibiti reference hospital in Congo Brazzaville.

Aking place over a period of 7 months, from 01/12/2023 to 10/06/2024. With a study population consisting of newborns hospitalized in the said department during the study period and having met the following selection criteria, namely:

- A fever isolated or associated with any other symptom
- A positive thick film/blood smear (GE/FS).

The exclusion criterion was the positivity of the biological infection assessment.

The parameters studied were epidemiological characteristics, clinical manifestations, biological data and therapeutic data.

Taking into account the duration of the endoerythrocytic cycle of Plasmodium falciparum [2], we considered any newborn with a positive thick film before the 8th day to be suffering from congenital malaria. Of life, and postnatal malaria being retained in the face of symptoms occurring after the 9th to 10th days of life with a positive thick film.

Based on the WHO criteria [3], we considered as severe malaria, manifestations combining one or more of the 15 severity criteria described by the WHO and as simple malaria, any other clinical or biological symptomatology, the exception of clinical manifestations not including any seriousness criterion.

RESULTS

From 01/12/2023 to 10/06/2024, 22 newborns out of 398 patients (birth) hospitalized in the pediatric department of Sibiti hospital in Congo Brazzaville. Met our selection criteria, i.e. a prevalence of 0.05% of neonatal malaria in a hospital environment.

Epidemiologically, there was a male predominance with 15 boys for 7 girls. The average age at admission was 4 days with extremes ranging from 5 to 8 days. The average weight was 2500g. two newborns (twin pregnancy) out of the twenty-two were premature, eleven were at term, with four hypotrophic babies and the other six were eutrophic.

The interview revealed a history of hospitalization for 03 of our patients, with the common point being a blood transfusion during said hospitalization. Anti-malaria prophylaxis based on chloroquine was regularly followed by the 11 mothers during the pregnancy.

With the exception of fever which served as a selection criterion, the clinical symptoms were much more dominated by pallor, found in 9 cases, Jaundice in 3 patients and 6 others had neurological disorders, such as Repeated tonic-clonic convulsions. The classification according to the Symptomatology, allowed us to identify 4 cases of congenital malaria disease, 13 cases of simple post-natal malaria and 5 cases of severe post-natal malaria including 3 anemic forms and 1 form that is both neurological and anemic Biologically, Plasmodium falciparum was found in all our patients. Parasitemias varied from 900 to 150,000 trophozoites per mm3. The highest parasitemias were encountered during severe malaria, with values between 1100 and 150,000. The hemoglobin level varied from 3.6 to 13.7g/dl. Note that all 5 patients who presented with serious postnatal malaria had a hemoglobin level below the threshold value for blood transfusion in the newborn.

Therapeutically, 4 patients benefited from treatment with quinine salts, at a dose of 20 mg/kg/day divided into three doses (infusions) daily for 3 days with a blood transfusion in those anemic. The progress under treatment was simple in all patients. The thick blood test done in 11 patients was negative.

DISCUSSION

This study allowed us to identify 4 cases of neonatal malaria, within the pediatrics and neonatology care department over a period of 7 months, i.e. a prevalence of 0.05%. Confirming that malaria is a reality during the neonatal period, although rare. Indeed, in hyper-endemic regions, the frequently infected placenta retains a filter role, hindering the passage of parasites from the mother to the newborn. Likewise, IgG type antibodies transmitted from the mother to the newborn antenatally provide the latter with good immunity. Furthermore, the presence of high levels of fetal hemoglobin in the newborn does not favor the multiplication of the parasite.

The fairly high frequency of postnatal malaria in our study could be explained by the fact that we selected patients who were already. Symptomatic, and also living in an endemic environment without using impregnated mosquito nets and presenting with episodes of fever. The noted male predominance is a common occurrence in most conditions at this age [4-6].

Blood transfusion, prior to the start of the demonstrations clinics, leads us to conclude that it is an anemic form of malaria. Of the Cases of anemic forms of malaria have been described in adults [8-9]. Indeed, Plasmodium falciparum trophozoites can continue their development within blood bags and possibly lead to access Malaria [9]. In non-endemic countries, the risk of transfusion-related malaria is very low and even rare. In Benin, a study carried out in 1998 and involving 355 volunteer blood donors revealed that 33.5% of them, or 119 donors, were carriers of Plasmodium falciparum trophozoites [9]. This raises the problem of systematic control of parasitemia in the blood bag, before any transfusion, including in newborns. It is therefore important to look for risk factors for the occurrence of malaria, specific to the neonatal period, from a larger sample. In total, the clinical profile of neonatal malaria could be, according to our study, that of a newborn with a history of blood transfusion, hospitalized for fever and pallor associated or not with other symptoms.

Therapeutically, the effectiveness and good tolerance of quinine salts have been confirmed in our newborns. Indeed, the question of therapeutic choice in simple forms of neonatal malaria arises. Prevention must therefore constitute a key element in the fight against malaria at this age. In addition to the prevention and

treatment of cases of malaria in pregnant women, the use of mosquito nets impregnated with insecticide and the destruction of larval breeding sites according to the 2005 national recommendations must be rigorously implemented. Applied [7]. Concerning the prevention of transfusional malaria, carrying out a GE/FS on the blood bag to be transfused, as well as in the newborn before and after any transfusion, could help reduce the risks. In general, pediatricians should have easy thick blood flow in the newborn and in particular, when the latter has been transfused.

CONCLUSION

Malaria does exist in the neonatal period but it remains uncommon. The risk of contamination by blood transfusion exists in the newborn and seems to be the cause of serious forms of postnatal malaria.

It is very important, in endemic areas, to have easy thick blood flow in newborns in a hospital environment. Performing a GE/FS on the blood bag to be transfused, as well as in the newborn before and after any blood transfusion, could help reduce this risk.

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