

Anemia in Parturients within the Mother-Child Department of Tengandogo Teaching Hospital, Burkina Faso

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Abstract

Objective: Study the epidemiological, clinical, para-clinical and therapeutic aspects as well as the maternal and perinatal prognosis of anemia in parturients. **Background:** Anemia is a public health problem in Burkina Faso. It mainly affects pregnant women. **Patients and Methods:** This was a descriptive and analytical cross-sectional study with prospective data collected from January 1st to September 30th, 2021. The study population included all parturients received within the department. **Results:** We included 378 parturients. We included in our study, all the parturients who underwent blood count upon admission and who had a hemoglobin rate below 11 g/dl. The frequency of anemia was 35.9%. The average age of anemic parturients was 27 ± 6.3 years. Compliance with anemia preventive treatment was good in 63% of cases. Out of the 378 anemic parturients, 55.8% were delivered by cesarean section. At delivery, 21 stillbirths were recorded. The mean hemoglobin level on admission was $9.27 \text{ g/dl} \pm 1.6$. Normochromic microcytic anemia was present in 50.7% of cases. We recorded 1 case of maternal death (0.2%). The perinatal mortality rate was 7.4%. **Conclusion:** Despite the government's efforts, anemia in pregnant women remains a public health problem in our country. This reality calls on decision-makers to lay emphasis on measures to prevent anemia in pregnant women.

Keywords

Anemia, Pregnant Women, Delivery, Burkina Faso

1. Introduction

Anemia affects 52% of pregnant women in developing countries. The prevalence

of anemia in pregnant women in Africa was estimated at 57.1%. According to WHO [1], anemia in pregnancy is defined by having a hemoglobin level below 11 g/dl.

Pregnancy is a condition aggravating anemia, especially in the 2nd and 3rd trimester. Moreover, anemia can affect the pregnancy by causing maternal and fetal complications [2].

In order to prevent anemia during pregnancy, Burkina Faso has set up a certain number of measures such as the Strategic Nutrition Plan, and the Acceleration Plan for the Reduction of Maternal and Neonatal Mortality [3] [4]. Besides, on June 2, 2016, the government of Burkina Faso has adopted free health care for pregnant women and children under five in order to further improve access to health care [5].

Despite these measures and studies conducted, the problem stills persists, hence our interest in the issue. Through this study, we are proposing to describe the epidemiological, clinical, paraclinical and therapeutic aspects as well as the maternal and perinatal prognosis of anemia in parturients within the mother-child department of the CHU-T (Tengandogo Teaching Hospital) so that to contribute to a reinforced risk-free maternity health care.

2. Patients and Methods

Our study was conducted within the mother-child department of the Tengandogo Teaching Hospital. This was a descriptive, analytical and cross-sectional study with prospective data collected from January 1st to September 30th, 2021. The study population included all parturients received within the department.

According to the 2010 Burkina Faso Demographic and Health Survey (DHS), the prevalence of anemia among pregnant women was estimated at 58% [6]. Accepting an alpha risk of 5% and an accuracy of 95%, the minimum number of subjects to be included in the study was 375 parturients.

We included in our study, all the parturients who underwent blood count upon admission and who had a hemoglobin rate below 11 g/dl.

Data sources included delivery, admission, and operative records, as well as medical records.

Sociodemographic characteristics, clinical and therapeutic aspects as well as prognosis were the variables studied.

The socioeconomic level was assessed based on WHO score resulting from the summation of the rating of the various elements of professional activity, origin, place of residence, presence of running water, electricity, type of toilet and transport means.

Data were entered and analyzed on a microcomputer through Epi info software version 7.5.1. Graphs were made using Excel 2016 software and text was entered through Word 2016 software.

Ethics Approval: This study was conducted under the supervision of the university JOSEPH KI-ZERBO of Ouagadougou, medical school. We obtained the

approval of the Medical Establishment Commission of Tengandogo Teaching Hospital which acts as an ethics committee at the local level. Confidentiality of individual data was ensured at all stages of the study, during the collection and analysis of data through the use of individual and anonymous data collection forms.

3. Results

3.1. Frequency

1053 parturients met our inclusion criteria during the study period, among these 1053 patients, 378 were anemic, which corresponds to a frequency of 35.9%.

3.2. Patients' Sociodemographic Characteristics

The average age of the anemic parturients was 27 ± 6.3 years with extremes of 15 and 45 years. The average number of pregnancies was 2.8 ± 1.7 with extremes of 1 and 10. The average number of deliveries was 2.5 with extremes of 1 and 9. The distribution of patients according to socio-demographic characteristics is presented in **Table 1**.

3.3. Clinical Aspects

79.7% of cases had their pregnancies followed-up in a peripheral health facility against 90.4% of pregnancies followed-up by a midwife and 4.2% followed by an obstetrician-gynecologist. Compliance with anemia preventive treatment was good in 63% of cases. In our series, 88.5% of the anemic parturients received anti-malarial chemoprophylaxis during pregnancy monitoring. Moreover, 79.6% of anemic parturients received systematic deworming during pregnancy monitoring. In our series, 6.8% of patients had sickle cell disease.

Among the anemic parturients, the term of pregnancy of 19% of cases was below 37 weeks of amenorrhea. In our study, 79.3% of the anemic parturients were evacuated. There were 16 cases of fetal death in utero and 75 cases of fetal distress during labor.

Out of the 378 anemic parturients, 55.8% was delivered by cesarean section. At delivery, we recorded 21 stillbirths, corresponding to 5.5%, among which there were 16 fresh stillbirths and 5 macerated stillbirths. We resuscitated 51 newborns at birth corresponding to 13.5% of live births. In our study, premature newborns represented 19% of cases.

3.4. Paraclinical Aspects

The average hemoglobin level on admission was $9.27 \text{ g/dl} \pm 1.6$ with extremes of 1.9 and 10.9. Anemic parturients were divided into three categories according to the severity of anemia. Anemia was considered as mild ($\text{Hg} \geq 10 \text{ g/dl}$ and $< 11 \text{ g/dl}$) in 46.8% of cases, as moderate ($\text{Hg} \geq 7 \text{ g/dl}$ and $< 9 \text{ g/dl}$) in 43.9% of cases and as severe ($\text{Hg} < 7 \text{ g/dl}$) in 9.2%.

Table 1. Distribution of patients according to sociodemographic characteristics (n = 378).

Socio-demographic characteristics	Number	Percentage
Age		
10 - 19	54	14.2
20 - 29	177	46.8
30 - 39	143	37.8
40 - 49	4	1
Occupation		
Housewife	220	58.2
Salaried woman	52	13.7
Trader	39	10.3
Informal sector	37	9.7
Pupil/Students	30	7.9
Educational level		
Not educated	114	30.2
Educated	264	69.8
Marital situation		
In union	355	93.9
Single	23	6.1
Residence		
Urban area	314	83.1
Rural area	64	16.9
Socioeconomic level		
Low	150	39.7
Average	207	54.7
High	21	5.6

Based on the Mean Corpuscular Volume (MCV) and Mean Corpuscular Hemoglobin Concentration (MCHC), a distribution of patients was made according to the type of anemia. Such distribution is shown in the following **Table 2**.

Normochromic microcytic anemia was present in 50.7%.

3.5. Prognostic Aspects

The maternal prognosis was favorable in 90.7% of the parturients. However, the delivery and postpartum periods were marked by some complications. There were 11 cases of delivery hemorrhage and 11 cases of postpartum infections. Endometritis, septicemia, acute post operative peritonitis were the major post partum infections. 1 case of maternal death (0.2%) was recorded.

The stillbirth rate was estimated at 5.5%. The number of early neonatal deaths (D0 to D7) was 7, giving an early neonatal mortality rate of 1.9%. The perinatal mortality rate reached 7.4%.

Table 2. Distribution of patients according to the type of anemia (n = 378).

Type of anemia	Number	Percentage (%)
Normochromic microcytic	192	50.7
Normochromic normocytic	146	38.6
Hypochromic microcytic	32	8.4
Macrocytic normochromic	5	1.3
Hypochromic normocytic	3	0.8
Total	378	100

4. Discussion

The frequency was estimated at 35.9%, a rate similar to other results found in the literature. As a matter of fact, Ilboudo *et al.* has found a percentage of 38.2% of anemic women [7]. However, AYOYA *et al.* in Mali and OUZENNOU in Morocco found higher frequencies respectively estimated at 47% and 41% [8] [9]. These different rates reflect the high prevalence of anemia in pregnant women in Africa, which is certainly due to multifactorial causes.

The average age was 27 ± 6.3 years. KANTE *et al.* in Guinea, KARAOGLU *et al.* in Turkey respectively found an average age of 24 and 26.5 years [10] [11]. In our series, more than half of the anemic parturients were jobless or were housewives. Our findings are similar to those of GEBRE [12] in Ethiopia. In our study, the anemic parturients with a low socioeconomic level represented 39.6%. BEKELE *et al.* in Ethiopia, TANER *et al.* in Turkey as well as BUKAR *et al.* in Nigeria found an association between the socio-economic level and the occurrence of anemia in parturients [13] [14] [15]. Indeed, families with a low living standard are often unable to provide the same nutritional intake as middle-income or higher-income families.

Poor compliance with anti-anemic chemoprophylaxis during pregnancy is likely to increase the risk of anemia at the pregnancy end. ZHANG *et al.* in China also found an association between anti-anemic chemoprophylaxis and the occurrence of anemia in pregnant women [16]. Iron + folic acid supplementation probably contributed to increase the hemoglobin level in our patients. In our series, 06.8% of anemic parturients were sickle cell patients. Our results are similar to those of SAWADOGO in Ouahigouya who found 6.6% [17].

The average hemoglobin level upon admission is $9.27 \text{ g/dl} \pm 1.6$. KANTE *et al.* in Guinea, OUZENNOU *et al.* in Morocco also found that mild anemia was the dominant type respectively with 62% and 56.6% [9] [10]. Furthermore, in our series, severe anemia had a prevalence of 9.2%. In contrast, DIALLO *et al.* in Mali reported in their study a higher proportion of severe anemia with a rate estimated at 30.3% [18]. These values could be attributed to poor martial supplementation and inadequate nutritional intake.

59.2% of microcytic anemia was recorded during our study. Our result is close to that of BUKAR *et al.* in Nigeria who found a dominant microcytic anemia

with a rate of 54.9% [15]. Based on literature, microcytic anemia generally occurs more frequently during pregnancy. The predominance of microcytic anemia consolidates the main cause of severe anemia in pregnancy, which is martial deficiency. However, it would be ideal to measure serum iron and ferritin to better identify iron deficiency anemia.

One case of maternal death was recorded corresponding to a maternal mortality of 0.2%. SAWADOGO [17] in Ouahigouya found a maternal mortality of 1.7% and KANTE [10] *et al.* in Guinea found 2% of maternal deaths. This result is below that of Ayoya [8] in Mali who found a mortality rate of 5%. This could be explained by the greater frequency of severe anemia in his series as opposed to ours.

Prematurity concerned 19% of the newborns. This result is close to that of SAWADOGO [17] in Ouahigouya who found 15.9%. Unlike the studies of SMITH [19] *et al.* and KIDANTO *et al.* [20], our study did not find any association between maternal anemia and prematurity. These differences could be explained because the rate of severe anemia was high in these last two previous studies. A correlation between the degree of anemia and prematurity could therefore be established.

In our series, 24% of newborns had a birth weight under 2500 g, which is similar to the observations made by SAWADOGO [17] in Ouahigouya who found 23.3% of newborns with a low birth weight. The birth weight depends on several factors, including the pregnancy term and date, and the mother's health and nutrition status.

Limits of the study: we didn't have to add a control group (parturients without anemia).

5. Conclusion

Finally, our study whose purpose was to study anemia in parturients in the mother-child department of the Tengandogo Teaching Hospital found that anemia in parturients is always frequent and the prognosis was reserved. Anemia in pregnant women remains a public health problem in our country despite the efforts made by the government on the one hand and by health workers on the other. This reality calls on decision-makers to emphasize measures to prevent anemia among pregnant women.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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