

## Manifestations of COVID-19 in Black African Pregnant Women

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**ABSTRACT**

**Introduction:** Previous coronavirus outbreaks have shown increased risks of maternal complications. The main objective was therefore to describe the epidemiological, clinical, therapeutic and prognostic aspects of COVID-19 in black African pregnant women.

**Materials and Method:** Retrospective descriptive study over a period of 16 months at the Regional Hospital of Lomé Commune, national reference center for the management of COVID-19 in Togo.

**Results:** Twenty-one pregnant women, one of whom was excluded from the study were hospitalized out of 1338 hospitalized patients. The mean age was 27.9 years [17 - 40 years]. Pregnancy was diagnosed during hospitalization in 3 pregnant women. Nine pregnant women were in the first trimester of pregnancy and 4 in the third trimester. The clinical classification of COVID-19 showed 7 severe forms and one critical form. Complications were pulmonary embolism, respiratory distress with desaturation, acute pulmonary edema and metrorrhagia. The evolution of the other pregnancies was marked by threats of premature delivery and one fetal death. Nine pregnancies progressed normally and 4 women delivered by cesarean section. Two pregnant women with severe and critical conditions respectively died.

**Conclusion:** The manifestations of COVID-19 in black African pregnant women are not different from other races.

**Keywords**

SARS-CoV-2, COVID-19, Pregnancy, Black African woman, Togo.

**Introduction**

Previous coronavirus outbreaks such as SARS-CoV and MERS-

CoV have shown increased risks of maternal and obstetric complications [1]. Pregnancy-induced immunological and hemodynamic changes may cause increased susceptibility to viral infections; in particular some respiratory infections such as influenza, but also other coronaviruses such as SARS-CoV and MERS-CoV [1,2].

It is noted that the symptomatology reported in case of COVID-19 infection in a pregnant woman is not different from that described outside pregnancy [3]. There is no demonstrated excess mortality risk in pregnant women [4].

In previous pandemics such as SARS and H1N1, pregnant women were more likely to develop severe disease and had a higher mortality rate than the general population [5].

Most of the data regarding the manifestations of COVID-19 in pregnant women are reported in the United States, Europe and Asia. It seemed important to us to describe these manifestations in the black African context in pregnant women in order to make a comparison. The main objective of this study was therefore to describe the epidemiological, clinical, therapeutic and prognostic aspects of the association between COVID-19 and pregnancy in black African pregnant women.

## Materials and Method

### Type and period of study

We conducted a retrospective descriptive study over a period of 16 months from March 6, 2020, to June 30, 2021, at the Regional Hospital of Lomé Commune, the reference center for the management of COVID-19 in Togo, which was transformed into a national center for the management of epidemic diseases by presidential decree issued by the Council of Ministers on March 21, 2020.

### Target population

The target population was all pregnant women hospitalized for COVID-19.

### Inclusion criteria

All pregnant black women or parturient women with COVID-19 who were hospitalized at the CHR-Lomé-Commune were included in the study.

### Tools and data collection

We used a questionnaire that allowed us to collect data using the patients' records. Some patients were contacted by telephone to complete missing data.

### Studied variables

The main variables studied are: age, comorbidities, symptoms, evolution in hospitalization, evolution of pregnancy, length of stay in intensive care unit, length of hospitalization and time to negativation of the Reverse Transcription Polymerase Chain Reaction (RT-PCR) SARS-CoV-2.

### Ethical considerations

For the realization of the present study, a research protocol was sent to the National Coordination of Response Management COVID-19 which gave its agreement. Data collection was carried out anonymously, confidentially and after obtaining consent for the data to be completed by a telephone interview.

## Results

### Socio-demographic characteristics

Six hundred and fifty-five women (49%) were hospitalized out of a total of 1338 patients hospitalized during the study period. Among them, 350 were women of childbearing age (53%) including 21 pregnant women (6%). One pregnant woman was excluded because her medical record was not found. The overall prevalence among all hospitalized patients was 1.49 (20/1338) and that among women of childbearing age was 3.05% (20/350). They had a mean age of 27.9 years [17 - 40 years] and a standard deviation of 6.57. The most represented age group was [30-35 years].

### Characteristics of the pregnancy

Pregnancy was diagnosed during hospitalization in 3 pregnant women. The gestational age of the patients was distributed as follows: first trimester (n=9); second trimester (n=1); third trimester (n=4). This information was not provided for 4 patients.

### Background

Medical histories were taken in 9 pregnant women, 4 of whom had hemoglobinopathy. One pregnant woman had a history of cesarean section. Six pregnant women were primiparous.

### Clinical signs

The symptoms presented by the pregnant women are shown in Table I signs.

**Table 1 :** Distribution of symptoms presented by pregnant women

Symptoms	Effective
Cough	8
Fever	7
Dyspnea	6
Asthenia/ aches	4
Nausea/vomiting	4
Anosmia	3
Rhinitis	2
Agueusia	2
Anorexia	2
Abdominal pain	2
Others* (see below)	5

(\*) : headache (n=1); convulsive seizures (n=1); psychomotor agitation (n=1) ; joint pain (n=1); chest pain (n=1); epigastric pain (n=1); throat irritation (n=1) ; hemoptysis (n=1)

### Clinical classification

Clinical classification of COVID-19 pneumonitis in pregnant women showed 9 cases of mild form, one moderate form, 7 cases of severe form and one critical form. Two pregnant women were asymptomatic.

### Therapeutic aspects

Nineteen pregnant women received the Chloroquine+Azithromycin protocol. Symptomatic treatment according to symptoms was given to 12 pregnant women and 5 pregnant women received oxygen therapy of which 3 were resuscitated. Lung maturation was required in one pregnant woman.

## Evolution

Clinical status improved spontaneously in 15 pregnant women. Five complications were reported in: pulmonary embolism (n=1), respiratory distress with desaturation (n=3), acute pulmonary edema (n=1) and metrorrhagia (n=1). The worsening of the clinical symptomatology was noted in 3 pregnant women among which 2 who presented respectively a severe and critical form died. Concerning the pregnancies, we note that 9 pregnancies were in good progress. The evolution of the other pregnancies was marked by 3 cases of threatened preterm delivery, 2 cases of overterm delivery, 2 cases of severe pre-eclampsia, 1 case of gravidic hypertension and one fetal death. The outcome of the pregnancies shows that 7 deliveries were normal by vaginal route and 4 caesarean sections were performed. The indications for cesarean sections were: generally narrowed pelvis, pre-eclampsia + acute pulmonary edema; pre-eclampsia scarred uterus.

## Length of hospitalization

The mean length of hospitalization was 16 days [7 - 53 days] with a standard deviation of 10.87.

Eight pregnant women were admitted to the ICU with a length of stay between 1 and 11 days.

## Time to negativity of SARS-CoV-2 RT-PCR

The majority of pregnant women (n=11) had their SARS-CoV-2 RT-PCR test negative between 10 and 20 days.

## Discussion

This study is a first in sub-Saharan Africa that describes the manifestations of COVID-19 in pregnant black African women. It allows for a comparison with data from the literature outside the African continent, particularly sub-Saharan Africa.

## Prevalence

In 2020 in the United States of America, data from the Centers for Diseases Control and Prevention (CDC) reported that in more than 300,000 individuals identified as COVID-19-positive women, gravid status was available in 28% of cases, including 9% of pregnant women [6].

## Gestational age

Several studies have shown that the diagnosis of SARS-CoV-2 infection occurs in the majority of cases in the 3rd trimester of pregnancy [7-10]. Changes in the immune system especially during the first and third trimester marked by the transition from a pro-inflammatory state during the first trimester to an anti-inflammatory state in the second trimester, and finally to a second pro-inflammatory state in the third trimester [11]. These immune changes may increase the mother's susceptibility to certain infectious diseases [12].

It was also found that during pregnancy, the total number of CD3+ T cells in the blood decreased, and that the increase in estrogen and progesterone levels during the first trimester of pregnancy would lead to reversible degeneration of the thymus, this could explain the decrease in CD3+ T cells (CD4+ and CD8+) and NK cells, as

well as a decrease in the activity of these cells, thus affecting viral clearance and contributing to the increased sensitivity of pregnant women to the virus [13].

## Symptoms

The symptomatology in pregnant women is almost similar everywhere else. Fever associated with dyspnea and/or cough are the main clinical manifestations frequently described [14,15].

## Severity of the disease

In France, in a series of 617 cases of symptomatic pregnant women with COVID-19, 15.1% were severe cases requiring oxygen therapy and 5.7% were critical cases requiring invasive ventilation or extracorporeal membrane oxygenation (ECMO) [16]. In a study in the United States of America, a series of 43 pregnant women showed the following distribution: 86% moderate, 9.3% severe and 4.7% COVID-19 critical lung disease [17]. Furthermore, CDC Atlanta also reported in a study that out of 8,207 pregnant women, 16% of these patients required intensive care hospitalization, 8% of which required respiratory support [18]. This systematization of severity, although there is a difference in size, is roughly similar to what is found in our series when comparing the proportions of severe and critical forms.

A meta-analysis found an increased risk of hospitalization in intensive care unit (OR 1.62-CI 95%(1.33-1.96)) and mechanical ventilation (OR 1.88-CI 95%(1.36-2.60)) in pregnant women compared to nonpregnant women of childbearing age [6]. There is no demonstrated excess mortality risk in pregnant women. Maternal age over 35 years and obesity were associated with an increased risk of severe form, as in the general population. A history of diabetes, pre-eclampsia, or the presence of gravid vascular disease could also be risk factors for severe COVID-19 [16].

## Therapeutic aspects

Therapeutically, a treatment with a favourable safety profile for the mother and the fetus is recommended.

In general, therapeutic procedures have included symptomatic treatment, oxygen therapy, antibiotic therapy, anti-inflammatory agents and antiviral therapy [19]. As no cure for COVID-19 is yet established, all drug trials should be considered experimental. According to the International Society of Ultrasound in Obstetrics and Gynecology (ISUOG), corticosteroids have a place only in the prevention of neonatal pulmonary hypoplasia, necrotic enterocolitis, and intraventricular hemorrhage due to prematurity. Hydroxychloroquine has a favorable safety profile in pregnancy, but general precautions should be considered. Antiretrovirals are currently being tested in clinical trials but have no place in pregnancy unless other treatment options are available [20].

## Evolution of the pregnancy and complications

The different studies have shown a very high rate of caesarean delivery in pregnant women [21]; this was not the case in our series where two caesarean deliveries were done urgently in two women who were moreover the two reported deaths and whose clinical condition was severe.

The mode and timing of delivery should be decided according to the severity of the disease, maternal comorbidities and obstetrical indications [22].

Complications such as premature delivery and in utero death reported in the literature [22] were also seen in our study added to complications such as severe pre-eclampsia, hemorrhage, pulmonary embolism, respiratory distress with desaturation.

## Conclusion

This study shows that COVID-19 would represent a risk factor for maternal complications in patients in the third trimester of pregnancy in terms of threat of preterm delivery and fetal suffering. Similarly, it has been noted that pregnancy represents an important risk of developing the moderate and severe forms of the disease. Furthermore, despite the small sample size of our series, there is no difference in the manifestations of COVID-19 in pregnant black African women compared to the literature data in pregnant women of other races.

Pregnancy increases the risk of severe COVID-19 regardless of race.

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