Ebola Hemorrhagic Fever and Pregnancy

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Fifteen (14%) of 105 women with Ebola hemorrhagic fever hospitalized in the isolation unit of the Kikwit General Hospital (Democratic Republic of the Congo) were pregnant. In 10 women (66%) the pregnancy ended with an abortion. In 3 of them, a curettage was performed, and all 3 received a blood transfusion from an apparently healthy person. One woman was prematurely delivered of a stillbirth. Four pregnant women died during the third trimester of their pregnancy. All women presented with severe bleeding. Only 1 survived; she had a curettage because of an incomplete abortion after 8 months of amenorrhea. The mortality among pregnant women with Ebola hemorrhagic fever (95.5%) was slightly but not significantly higher than the overall mortality observed during the Ebola epidemic in Kikwit (77%; 245/316 infected persons).

During the Ebola (EBO) hemorrhagic fever (EHF) epidemic in Kikwit, Democratic Republic of the Congo (DRC), the number of infected women was slightly higher than the number of infected men [1]. During the Kikwit epidemic, only a small number of women were pregnant, which contrasts with the EBO epidemic in Yambuku, DRC, where 82 (46%) of 177 EBO-infected women were pregnant [2–4]. Of the 202 EHF patients hospitalized at the Kikwit General Hospital, 105 were women, and 15 (14%) of them were or had been pregnant during their illness. This report describes these 15 women.

Patients and Methods

Between April and June 1995, 15 pregnant women with EHF, as determined according to the definition used for epidemiologic surveillance of EHF [1] in the Kikwit area, were hospitalized in the isolation unit of the Kikwit General Hospital. The diagnosis of pregnancy was based only on anamnesis and clinical examination. Clinical information was obtained retrospectively from medical records and EBO surveillance questionnaires.

Results

Of the 15 pregnant women with EHF, 4 (27%) were in the first trimester, 6 (40%) in the second trimester, and 5 (33%) in the third trimester. Their mean age was 32 years (range, 24–38). They developed the following symptoms and signs: fever (100%), asthenia (100%), abdominal pain (100%), conjunctivitis (100%), anorexia (100%), diarrhea (100%), hiccups (100%), arthralgia (100%), shock (100%), dysphagia (100%), nausea (87%), vomiting (73%), retrosternal pain (46%), cutaneous eruption (13%), and an increased respiratory rate (60%). They all presented with signs of hemorrhage, including severe genital bleeding (100%), melena (67%), gum bleeding (53%), ecchymosis (47%), bleeding at injection sites (47%), hematemesis (40%), petechia (13%), and hematuria (7%). Neuropsychiatric symptoms were also noted in all women: headache (100%), anxiety (100%), decreased consciousness (100%), apathy (93%), coma (93%), delirium (67%), and convulsions (47%). No differences were observed in the clinical course of the infection according to age or parity. One patient survived, and the others all died within 10 days (mean duration of illness of those who died, 8 days; range, 4–13).

In 10 women (67%), the pregnancy ended with an abortion. In 3 of them a curettage was done, and they received a blood transfusion from an apparently healthy individual (blood group testing was done but no serologic testing for EBO, human immunodeficiency virus [HIV], hepatitis, or other diseases). In all 3 women the curettage was done before they were diagnosed with EHF, and the health care worker performing the curettage wore gloves, a mask, and a plastic apron.

Only 1 woman survived. She was 32 years old and had had a curettage because of an incomplete abortion after 8 months of amenorrhea. The patient survived despite hypovolemic shock caused by severe genital bleeding. One of the women was prematurely delivered of a stillbirth at 32 weeks. Four women died during the third trimester of their pregnancy. Only 1 woman delivered a full-term baby. The mother of this baby had developed fever 4 days before delivery. The delivery took place at the home of the mother, and the baby developed fever and died 3 days later. The mother died because of extremely severe genital bleeding.

Discussion

Spontaneous abortion is frequent in pregnant women with EHF. A high frequency of abortion has also been observed during infection with other hemorrhagic fevers, such as Lassa

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The Journal of Infectious Diseases 1999; 179(Suppl 1):S11–2

0022–1899/99/79S1–0003$02.00

fever [5]. During the epidemic in Yambuku in 1976, 19 abortions (23%) among 82 pregnant women with EHF were reported [2].

There are several factors that may explain the high incidence of abortions: pyrexia, intravascular coagulopathy, and EBO infection in fetuses of EBO-infected women. In Yambuku, a large number of pregnant women became infected with EBO because they had received vitamin injections with contaminated needles and syringes [4]. Injections played only a minor role or no role at all in the Kikwit epidemic [1].

Several infectious diseases, such as malaria, hepatitis, varicella zoster, polio, tuberculosis, and Lassa fever, have been reported to be more severe in pregnant than nonpregnant women [6–8]. Results for the small series of EBO-infected pregnant women in the current study suggest that EBO may also be more severe in pregnant women. More EBO-infected pregnant women presented with serious complications, such as hemorrhagic manifestations and neurologic complications, than did other EBO patients [9].

The case-to-death rate of the pregnant women with EHF was slightly higher (95.5%) but not significantly higher than the overall mortality rate (77%; 245/316 infected persons) during the epidemic. The mortality rate of nonpregnant women with EHF hospitalized at the Kikwit General Hospital was 70% (28/40).

In Yambuku, however, the death-to-case rate for pregnant women with EHF was 89%, similar to the overall mortality rate (88%) [2]. The usual mortality rate of women because of pregnancy in sub-Saharan Africa is ~870/100,000 live births [10].

The risk of death from Lassa fever was significantly higher in the third trimester than in the first two trimesters. In addition, mothers with Lassa fever improved rapidly after evacuation of the uterus by spontaneous abortion, evacuation of retained products of conception, or normal delivery [5]. In contrast with mortality among pregnant women with Lassa fever, the mortality of pregnant women with EHF in Kikwit was equally high in all trimesters of pregnancy [5].

We do not know whether the clinical course of EBO infection in the pregnant women was influenced by a potential infection with HIV or *Plasmodium* species, because laboratory tests to diagnose such infections were not performed during the epidemic to avoid further nosocomial transmission of EBO virus infection. However, none of the women had clinical symptoms or signs of HIV infection before they developed EHF.

In Kikwit, only 1 full-term baby was born, and both the mother and infant died. In Yambuku, 10 live infants were born to mothers who died of EHF. All of these children also died within 19 days. Very little information is available about the circumstances in which these children died. Seven were said to have developed fever, but hemorrhagic symptoms were rare. In Mayibout, Gabon, of 17 women with EHF, only 1 was pregnant; her baby was stillborn [11]. So far, we do not know why these babies born to mothers with EHF died. It is likely that most of them died of EHF, but it remains unclear how they became infected (i.e., during pregnancy, during delivery, by breast-feeding, or through contact with other body fluids after delivery).

A clinical diagnosis of hemorrhagic fever in a pregnant woman is complicated because pregnant women may bleed for other reasons, such as abortion unrelated to EHF or a placenta previa. During an EBO epidemic, every pregnant woman with genital bleeding should be considered as a suspected case of EHF.

Pregnant women with EHF may present with severe genital bleeding and may need a blood transfusion or curettage (or both). Therefore, health care workers caring for these women have a particularly high risk of acquiring EHF if they do not apply barrier nursing techniques. This includes wearing double gloves, a plastic or rubber apron over a long sleeve gown, a mask, and a full face protector (if available) or protective glasses for personal protection. Moreover, linens, instruments, bedding, and floors that have been soiled with blood or other body fluids should be disinfected with sodium hypochlorite. The application of universal precautions and barrier nursing techniques is not only of particular importance in maternity units in Africa to protect health care workers against EBO infection but also against other infections that are transmissible by blood, such as HIV and hepatitis.

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