

Viper bite during pregnancy: case report

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Summary

Viper bites in pregnant women have rarely been reported thus far. Moreover, there is no consensus regarding the treatment of such cases. In this paper, the authors report the successful treatment of viper bite during pregnancy without using antivenom.

Key words: Viper; Venomous snakebite; Pregnant woman; Antivenom.

Introduction

Viper bite during pregnancy appears to be uncommon, and such cases have been rarely reported thus far. Venomous snakebite in pregnant women may lead to poor outcomes for both the mother and fetus. For cases of venomous snakebite during pregnancy, previous literature reviews report a fetal death rate ranging from 38% to 43% and a maternal death rate of approximately 10% [1, 2]. Here, the authors present the case of a pregnant woman who was bitten by a viper who was successfully treated with good maternal and fetal outcomes without using antivenom. The authors obtained the approval of the submission by written consent.

Case Report

A 34-year-old gravida 1, para 1 woman at 36 weeks of gestation was bitten by an unknown snake on the road near her house and was transferred to the present emergency department. The snake was considered to be a viper since vipers were known to be present in that area.

The patient presented with one small puncture wound over at the first finger of the right foot (Figure 1). She complained of localized pain, and swelling was noted around the wound, however, no erythema, ecchymosis, or systemic symptoms were observed. The vital signs at admission were as follows: temperature, 37.4°C; pulse, 90 beats/min; respiration rate, 16 breaths/min; and blood pressure, 117/69 mmHg. The puncture wound was dissected and washed with saline water. Laboratory investigations showed normal bleeding and clotting times but with low levels of hemoglobin. The coagulation profile and renal function tests were also within the normal range (Table 1). An obstetrics and gynecology consultation was obtained for the patient's pregnancy and the condition of the fetus. Obstetric ultrasonographic results showed no abnormal findings. Fetal well-being was evaluated as normal by the biophysical profile score, and vaginal examination revealed a normal cervix for 36 weeks of gestation. The patient was administered prophylactic antibiotic therapy, but antivenom therapy was not initiated.

At six hours after the patient was admitted to the intensive care unit (ICU), examination revealed edema and ecchymosis throughout the bitten area extending up to popliteal fossa, however, there

was no change in the reported pain and observed swelling. Since fetal well-being and the coagulation profile continued to be normal, the patient was scheduled for follow-up visits without further treatment.

At 24 hours after admission, the edema and ecchymosis had progressed up to the groin (Figure 2) but the pain remained unchanged; subsequently, it began to recede. At three days after admission, the patient began to stand up by herself but was unable to walk due to severe pain. At six days after the bite, she could walk slowly although some pain and edema persisted. Further recovery was uneventful, and the patient gave birth to a healthy male infant weighing 3,118 g by spontaneous vaginal delivery at 11 days later after hospitalization. The Apgar scores were 9 and 10 at one and five minutes, respectively. Neither the mother nor the infant experienced any postpartum complications.

Discussion

Snakebite envenomation is not common in pregnancy. In the event of a viper bite in pregnancy, patients should be transported emergently to a facility with the appropriate obstetrical and emergency capabilities.

It is often difficult to accurately identify the species of snake. In the present case, the snake bite was diagnosed as a viper bite on the basis of the injury occurring in a place where vipers were frequently seen, the presence of fang marks, and localized swelling and pain. The fang marks were obviously confirmed. Typically, two fang marks are observed in viper bites. However, the patient showed only a single fang mark, which possibly resulted in a relatively favorable clinical course.

Definitive medical treatment for venomous snakebite should include an evaluation of the severity of the envenomation. The leading edge line of the swelling should be recorded initially and every 30–60 minutes thereafter (Figure 2). Laboratory values that should be monitored include coagulation, chemistry, and renal profiles along with a complete blood count. These should be repeated



Figure 1. — The fang marks at admission.



Figure 2. — The leading edge line of the swelling.

Table 1. — Laboratory values and coagulation parameters of the patient.

	At admission	6 hours later	12 hours later	24 hours later	48 hours later
WBC	9,900	15,700	12,400	13,200	10,000
Hb	10	9.9	9.6	9.1	8.5
Ht	31.4	31.1	30.1	28.5	27.6
PLT	36.7	32.8	27	27.9	22.4
APTT	25.7	27	27.8	27.4	29.1
PT%	>100	>100	89.6	98.6	85.7
Fib	504	457	459	445	459
AT III	107	100	92	94	87
CRP	0.38	0.38	1.34	3.08	5.68
CK	111	104	95	98	94
BUN	8	7	6	6	5
Cr	0.4	0.44	0.47	0.51	0.47

WBC: white blood cell (μ l), Hb: hemoglobin (g/dl), Ht: hematocrit (%), Plt: platelets (μ l), APTT: activated partial thromboplastin time (seconds), PT: prothrombin time (%), Fib: Fibrinogen (mg/dl), ATIII: antithrombin III (%), CRP: C-reactive protein (mg/dl), CK: creatine kinase (U/l), BUN: blood urea nitrogen (mg/dl), Cr: creatinine (mg/dl).

every few hours if there is any suggestion of envenomation. In general, the best chance to ensure fetal survival is to guarantee maternal survival and health [1]. Accordingly, maternal cardiorespiratory and renal functions and the coagulation profile must be routinely monitored. It is important to recognize and treat shock as soon as possible. Fetal heart rate and fetal movements should be followed continuously to ensure early recognition of fetal distress [3].

In general, antivenom is the standard treatment for severe snakebite envenomation. However, the effects of antivenom on the fetus remain unclear. Langley *et al.* reported that in 96 women who received antivenom, fetal deaths occurred in 29 patients, although only two (2.1%)

maternal deaths were reported; moreover, in the pregnant patients who did not receive antivenom, seven (6.6%) maternal deaths were reported [4]. Whereas acute adverse effects from the use of antivenom have been reported in mothers, only one case of serum sickness has been reported in a pregnant person [5]. Based on the limited number of cases reported, it appears that antivenom is effective in preventing maternal deaths. However, the safety of antivenom with regards to the fetus remains unclear. Antivenin crotalidae polyvalent (ACP), an equine-derived immune globulin antivenom, causes acute allergic reactions in up to 23% of patients and serum sickness in 50% [6]. A less antigenic ovine-derived antivenom, crotalidae polyvalent immune fab (CroFab), received FDA approval in 2000. A prospective trial reported a 14% incidence of acute reactions, of which nearly all were mild to moderate in nature [7]. Both products are included in the Pregnancy Category C by the FDA. Antivenom use in pregnancy is further complicated by the content of ethylmercury in the thimerosal preservative used in antivenoms. Fetuses exposed to organic mercurials have been well documented to display severe psychomotor retardation, cerebral palsy, and microcephaly after exposure to high doses. Therefore, ideally, physicians should refrain from using any antivenom in pregnant women as much as possible. In the present case, good maternal and fetal outcomes were obtained without using antivenom. However, if their use is essential, sufficient informed consent must be taken before their administration.

Prophylactic antibiotics were administered to the present patient because many types of bacteria are known to be present in the oral cavity of a viper. Although such prophylactic antibiotic administration in pregnant women remains controversial [8], the authors considered that the possibility of a bacterial infection was high in the present patient, based on the increased WBC and CRP counts at

24 hours after admission. The infection may have been severe if the authors had not administered the antibiotics. Therefore, they consider that prophylactic antibiotic administration was the correct treatment in this case.

No prophylactic administration of tetanus toxoid or antivenom was performed in the present case due to the problem of teratogenicity. Many authors have reported a favorable short-term prognosis in newborns following the administration of antivenom to pregnant women [7, 9]. However, no information is available concerning the long-term prognosis of such newborns.

In the present case, the authors treated the patient in cooperation with the departments of disaster and emergency medicine, pediatrics, and anesthesiology for ensuring complete care.

Conclusions

Pregnant patients who suffer viper envenomation should receive supportive care irrespective of the severity of the bite. The use of antivenom must be individualized, and the patient must be informed of the potential risks of antivenom administration to herself and to the fetus. It is necessary to establish a guideline for the management of venomous snakebite in pregnant women in order to avoid complications and to ensure good maternal and fetal outcomes.

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