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Snake bite in third trimester of pregnancy with systemic envenomation and delivery of a live baby in a low resource setting: A case report

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ABSTRACT

Background: Snake bite in the third trimester of pregnancy with late presentation, systemic envenomation; disseminated intravascular coagulopathy and delivery of a live neonate is uncommon in a low resource setting. *Case:* We present a 22 year old unbooked Gravida 3 Para 1^{+1} 1alive lentiviral positive woman at 32 weeks gestation with snake bite, leg swelling, vaginal bleeding and labour pains. At presentation, there were anemia, tachycardia, hypotension; a gravid uterus with a single fetus in longitudinal lie, cephalic presentation, regular fetal heart rate and cervical dilatation of 3 cm. Preterm labour with antepartum hemorrhage due to venomous snake bite was diagnosed. Multidisciplinary management instituted led to the survival of both mother and baby. *Conclusion:* In resource constrained setting, disseminated intravascular coagulopathy arising from systemic envenomation due to snake bite in pregnancy could be challenging. Obstetric outcome depends on the degree of envenomation, gestational age at presentation, timing, duration and quality of treatment.

1. Introduction

Snake bite is a rare event during pregnancy but a large series of hospital admissions from India reported a 1% rate of snake bite in pregnancy [1,2]. It was estimated that one million snake bites, 500,000 envenomation and 10,000–20,000 deaths occur each year in Africa [3,4]. In a region of Nigeria, 497 snakebites were reported among 100,000 populations per year, with a fatality rate of 12.2% [5].

Most snake bites are non-poisonous; however, the saw scaled or carpet viper *Echisocellatus* is responsible for 90% of bites and 60% of envenomation in the savanna region of Nigeria [5]. Others are black-necked spitting cobra (*Najanigricollis*) and puff adder (*Bitisarietans*) [6].

Snake venom contains more than 20 different compounds, mostly proteins and polypeptides. The proteins are responsible for almost all of its biological and clinical effects [7,8]. Pro-coagulant enzymes of viperid and elapid venoms include digestive hydrolases, phospholipases, thrombin-like pro-coagulant, kallikren-like serine proteases that deplete the body's clotting factors and eventually cause consumption coagulopathy [7–9]. Others are metalloproteinases (hemorrhaging) that damage the endothelial lining of blood vessel walls causing spontaneous local and systemic hemorrhage [7–9]. Phosphodiesterases on the other hand interferes with the cardiac system mainly to lower the blood pressure [7–9].

Snake bite in pregnancy may lead to teratogenesis and spontaneous miscarriages, antepartum hemorrhage, preterm labour and delivery, intrauterine fetal death and neonatal death [7,10,11]. Late presentation with features of local and systemic envenomation coupled with prematurity and delivery of a live baby in a low resource setting makes this case unique for reporting.

2. Case description

A 22-year old unbooked Gravida 3 Para 1^{+1} 1alive lentiviral positive woman at 32 weeks gestation was referred to our facility with six

Abbreviations: AGA, Appropriate for Gestational Age; APGAR, Appearance Pulse Grimace Activity Respiration; ARV, Anti-retrovirals; HIV, Human Immunodeficiency Virus; INR, International Normalized Ratio; IU, International Units; NHIS, National Health Insurance Scheme; PCV, Packed Cell Volume; PT, Prothrombin Time; aPTT, activated Partial Thromboplastin Time; TSB, Total Serum Bilirubin; WBCT, Whole Blood Clotting Time; WBC, White Blood Count; SPO_2, Oxygen Saturation Pressure

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days history of snake bite; and one day history of vaginal bleeding and lower abdominal pain. The bite was on the left foot following inadvertent stepping on the snake in her compound. The snake was killed by her relatives and the specie identified. There was slight bleeding from the bite site, dark discoloration of the surrounding skin and swelling of the left foot but no paraesthesia. A day after the bite, she noticed vaginal bleeding necessitating the use of sanitary pads but no liquor drainage. She had abdominal pain, body weakness and dizziness; but no loss of consciousness, difficulty in breathing, cough, and chest or muscle pain. She visited an herbalist who performed incisions on the left ankle and applied local herbs and black stone to the bite site. Increasing quantity of the vaginal bleeding necessitate presentation at a general hospital before referral to our facility. She had normal delivery at home of a live female baby 3 years prior to presentation. There was a history of multiple sexual partners and the index pregnancy was for a new partner. There was no prior blood transfusion or use of tobacco, alcohol or any other recreational drugs.

Examination revealed a young woman with Glasgow Coma Scale Score of 15, mild pallor, afebrile and anicteric. There was unilateral left leg edema, with discoloration, excoriation, desquamation and nodules on the dorsum of the foot. Hyperpigmented bluish macules were visible on the dorsum of the left forefoot and dorsal surfaces of the little and fourth toes of the same foot. There were also fang marks on the little toe, a black stone placed on the wound with circumferential scarification marks on the lower third of the left leg (Fig. 1). There was no bleeding from the nose, oral cavity or intravenous cannula site; the muscle tone and reflexes were normal. The pulse rate was 140 beats per minute; blood pressure was 90/60 mmHg and first and second heart sounds were heard and normal. The respiratory rate was 24 cycles per minute and the chest was clear clinically.

Symphyseo-fundal height was compatible with 32 weeks pregnancy, the fetus was in longitudinal lie and cephalic presentation. There were two contractions palpable in 10 min lasting 35 s. Fetal heart rate was 152 beats per minute and regular. Her vulva was stained with blood and digital examination was deferred. A clinical assessment of preterm contraction with antepartum hemorrhage due to venomous snake bite was made to rule out placenta praevia. Ultrasound scans excluded placenta praevia and vaginal examination thereafter revealed a cervical dilatation of 3 cm with intact fetal membranes.

Multidisciplinary management was instituted in conjunction with the physician, hematologist and neonatologist. Laboratory investigations revealed packed cell volume (PCV) of 22%; White Blood Cell Count (WBC) count 9500 cells/mm^3 and platelet count 75,000 cells/mm^3. Bedside clotting time (20WBCT) was prolonged on admission which later reduced to 4 min after treatment was instituted. Prothrombin time was also prolonged (PT was 21 s) with the international normalized ratio (INR) of 1.3, while the activated partial thromboplastin time (aPTT) for patient was 60s and that of the control was 45 s. Patient had a total of four units of fresh whole blood transfused. Lentiviral screening was positive; electrolyte urea and creatinine, liver function test were within normal limits while urinalysis showed mild proteinuria (1 +). Polyvalent anti-snake venom 10 ml in 250 ml of Normal saline was infused intravenously every 6 h until bedside clotting time was normal. The bite site was cleaned and dressed. She received anti-tetanus serum 1500 IU and intramuscular tetanus toxoid 0.5 ml in separate buttocks. Intramuscular dexamethasone 12 mg 12 hourly for two doses; oral erythromycin, metronidazole and antiretrovirals were also commenced. She had 10 ml of 10% Calcium gluconate after the fourth pint of blood. Fetal and maternal vital signs were monitored along with laboratory investigations until bedside clotting time, clotting profile and platelets became normal.

The bite site was cleaned and dressed. Fetal membranes were left intact, the labour progressed spontaneously to full cervical dilatation and subsequent vaginal delivery of a live male neonate with Apgar scores 3, 4 and 6 at first, fifth and tenth minute respectively. Standard precaution and specific intervention to prevent mother to child transmission of HIV was instituted. The third stage of labour was actively managed, estimated blood loss was 400 ml (in our facility) and there was no retroplacental clot observed. Six hundred microgram of misoprostol was passed rectally to prevent postpartum hemorrhage.

Subsequent management included oral hematinic, antibiotics and analgesics as well as antiretroviral treatment. The packed cell volume (PCV) before discharge on the sixth day postpartum was 27%. She was lost to follow-up in the postnatal and medical clinics.

The baby was admitted into the Special Care Baby Unit, ventilated via bag and mask for 10 min after which he sustained spontaneous respiration. There were also dyspnea, tachypnea, hypoxia (SPO_2 of 73% in room air), poor suck and grasp reflexes. Birth weight was 1.78 kg, anthropometric parameters were appropriate for gestational age (32 weeks) estimated by Ballard's score. The neonate had intravenous fluid and antibiotics (Ceftazidime and Genticin), intramuscular Vitamin K stat, oral Nevirapine and Oxygen by nasal prongs at 0.5 l/min. He developed jaundice on the third day of life with a total serum bilirubin (TSB) of 10.8 mg/dl and conjugated fraction of 0.75 mg/dl which was

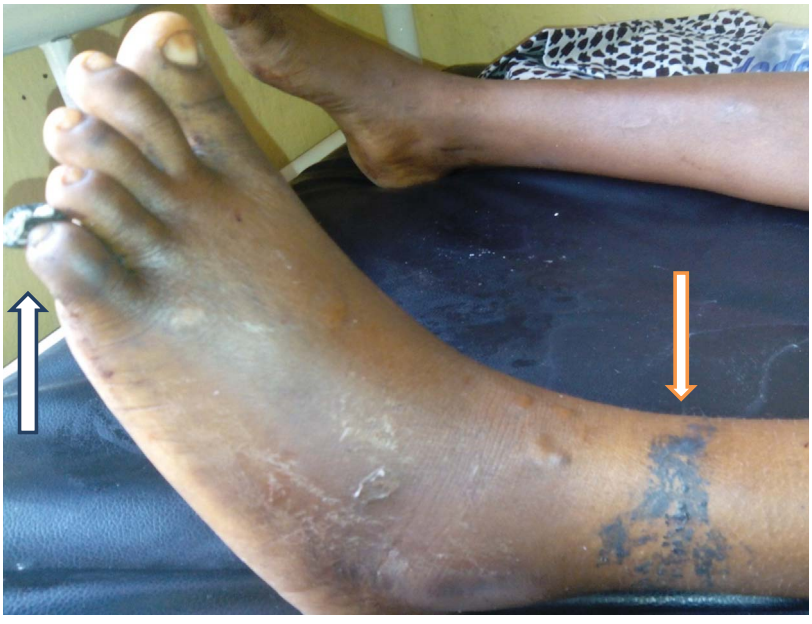

Fig. 1. Left leg showing edema, incision site with herbal medicine and black stone applied on the little toe.

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