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Timely Antivenom And Vigilant Obstetric Care: Turning The Tide In A Case Of Snakebite During Pregnancy

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Abstract
Background: *Snakebite envenomation during pregnancy is an uncommon but serious medical emergency, especially in tropical regions like India. Maternal and fetal outcomes depend on the type of venom, timing of treatment, and the clinical management provided.*
Case Presentation: *We present a case of a 28-year-old pregnant woman, gravida 3 para 1 at 34 weeks gestation, who was referred with hemotoxic envenomation following a snakebite on the right hand. She had received initial antivenom at a peripheral facility and was managed with continued antivenom therapy, blood product transfusion, and close fetal and maternal monitoring. Spontaneous labor progressed uneventfully, resulting in the vaginal delivery of a healthy male neonate. Both mother and baby had favorable outcomes without complications.*
Conclusion: *Early administration of antivenom, combined with vigilant obstetric care and appropriate supportive treatment, plays a pivotal role in preventing adverse maternal and fetal outcomes in snakebite during pregnancy.*
Keywords: *Snakebite, pregnancy, envenomation, antivenom therapy, maternal-fetal outcome, obstetric emergency.*

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I. 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]. Venomous snake bite in the pregnant woman may lead to a poor feto-maternal outcome.

Snake venoms are primarily composed of mixtures of proteins and polypeptides with various properties. Action of snake venom can be classified as hemototoxic, cytotoxic, neurotoxic, and inflammatory. The composition of venom varies with the species of snake, geographic locality and age of the snake [3]. The effect of venom on human can be influenced by the amount of venom injected and age and health of the victim [4].

Possible adverse obstetrics outcome after envenomation include teratogenesis, spontaneous abortion, antepartum haemorrhage, DIC, preterm labour, intrauterine fetal death. [5, 6].

II. Case Report:

A 28-year old female, Gravida 3 para 1 live 1 abortion 1 , at 34 weeks of gestation was referred to our facility with history of snake bite , and right hand swelling since one day. She had already received 10 vials of polyvalent anti-venom at the peripheral facility.

On examination, general condition was fair, afebrile, mild pallor, anicteric, pulse rate-106 bpm, blood pressure- 130/100 mmhg, oxygen saturation-95% on room air; first and second heart sounds were heard and were normal. The respiratory rate was 22 cycles per minute and the chest was clear. On per abdominal examination – uterus corresponded to 34 weeks, fetal heart rate was 142 bpm .There were two contractions palpable in 10 mins lasting for 30 seconds. It was cephalic presentation. On per vaginal examination, cervix was 3 cm dilated and 30% effaced .She was maintaining a urine output 0f 70 ml/hr with haematuria. On local examination right hand was swollen and tender with discoloration of surrounding skin [Figure1].

Figure 1: Swollen right hand with bite mark

There was no bleeding manifestation; muscle tone and reflexes were normal. No evidence of ptosis or paralysis. Laboratory investigations revealed haemoglobin – 9.0 gm/dl, white blood cell count – 13,500, platelet count – 1.44. 20 mins bedside clotting time was prolonged, Bleeding time – 10 minutes, clotting time – 12 minutes. PT/INR was also prolonged (PT – 24.30, INR – 1.75), APTT was 40 seconds. 20 minutes whole blood clotting time was repeated hourly for first 3 hours and every 4 hours for remaining 24 hours. Renal function tests and liver function tests were within normal limit .Ultrasonography corresponded to findings and was suggestive of a single live intrauterine pregnancy of 34 weeks , longitudinal lie, cephalic presentation , placenta was anterior , liquor was adequate and estimated fetal weight was 2.28kg . It excluded abrutio placenta and placenta previa. Patient was shifted to labour room and was started on antibiotics. Anti-venom was continued in a dose of 5 vials 6 hourly until the bedside clotting time was normal. The bite site was cleaned and dressed. Maternal vitals were monitored along with continuous fetal heart sound monitoring.1 pint PCV and 4pint FFP were transfused. Intrapartum period was uneventful. Spontaneous progression of labour occurred followed by vaginal delivery after full cervical dilatation. Male baby weighing 2.50 kg was born. Baby cried immediately and APGAR SCORE was 7 and 8 at 1 and 5 mins. IM Vitamin K was given stat and baby was taken to NICU for observation. The neonate was given intravenous fluid and antibiotic. No specific clinical or laboratory effect of snake venom or anti-venom used were seen in the fetus or neonates. Magnesium sulphate dressing of the swollen hand was done twice daily. Bleeding time and clotting time were done twice daily and PT-INR, APTT, CBC were repeated every day till within normal limits .Postpartum period was uneventful and the patient was discharged on day 7.

III. Discussion:

Snakebite is rare during pregnancy; however, when it does occur, it can lead to significant maternal and fetal complications, depending on the severity of envenomation. There are four snakes that are held responsible for most of the serious snakebites in India: Russell's viper, Spectacled Cobra, Common Krait and Saw-scaled Viper [7, 8] [Figure2].

Figure2: Russells viper, Spectacled Cobra, Common krait

Toxic snakebites are typically classified into three types based on the predominant venom effect: cytotoxic (most common), neurotoxic, and hemotoxic. Snake venom contains over 20 different biologically active components, primarily proteins and polypeptides [8, 9].

In viperid and elapid venoms, pro-coagulant enzymes include digestive hydrolases, phospholipases, thrombin-like enzymes, and kallikrein-like serine proteases. These enzymes deplete clotting factors and can result in consumption coagulopathy. Additionally, metalloproteinases in the venom damage the vascular endothelium, leading to spontaneous local and systemic hemorrhages [8–10, Figure 3].

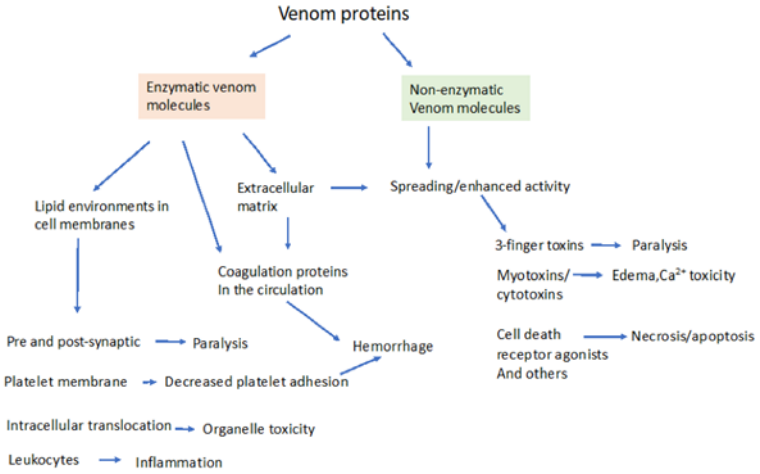

Figure 3: Mechanisms of Action of Enzymatic and Non-Enzymatic Venom Proteins

Patients bitten by neurotoxic snakes may develop flaccid paralysis within 1 to 8 hours [11]. These patients should be closely monitored every 15 minutes for early signs of paralysis, such as ptosis, facial weakness, blurred vision, and peripheral paraesthesia [12].

Moreover, snake venom includes a complex mixture of biochemical compounds, some of which have uterotonic properties. These substances can exert a direct effect on uterine muscle or act indirectly by triggering or enhancing the action of bradykinin, potentially leading to preterm labor.The maternal and obstetric complications includes obstetric hemorrhage, preterm labour and delivery, DIC, hypotension, hypovolemic shock and anemia; while fetal and neonatal complications included tachycardia, prematurity, neonatal jaundice, anemia and sepsis. Snake venom can reportedly cross the placenta in quantities sufficient to cause systemic toxicity in the fetus, even when there are no clear signs of envenomation in the mother [13].

Initial first aid for snakebite involves calming and reassuring the victim, immobilizing the affected limb using bandages or clothing in a manner similar to splinting a sprained ankle, and arranging urgent transport to a medical facility. The use of tourniquets or tight compression is not recommended [14].In pregnant women who are lying supine, it is advisable to position them in the left lateral position, and to keep the affected limb below the level of the heart to reduce venom spread [15]. The patient received polyvalent antivenom serum by intravenous infusion, which is the mainstay of treatment for venomous bites to neutralize the venom effects. The use of antivenom serum during pregnancy should balance its risk benefit and may be lifesaving. However, anaphylaxis that may follow its administration as well as its treatment with adrenaline may jeopardize the placental circulation [16]. We used fresh frozen plasma along with red blood cells for successful resuscitation. Our case highlights the importance of early intervention, symptomatic management and vigilance required to manage snakebite in pregnancy.

IV. Conclusion:

Prompt treatment with antivenom and adequate blood products is vital in saving the mother incase of snake envenomation. Timely delivery of the fetus is important.

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