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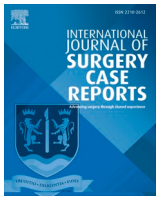

Case report

An ischemic complication of a snake bite: Case report

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ABSTRACT

Introduction and importance: Snakebite is a common type of animal bite injury worldwide. The local effect can manifest as an abscess followed by cellulitis and compartment syndrome which could cause ischemic tissue damage.

Case presentation: A case of a 40-year male with a history of a snake bite 4 days back complained of swelling, throbbing pain, bluish discoloration of the skin and blackish discoloration of the little finger. Incision and drainage were done initially with disarticulation of the gangrenous little finger and finally treated with a split-thickness graft.

Clinical discussion: Snakebite can lead to only the bite mark without clinical features, local manifestations around the bite site, systemic toxicity due to redistribution of venom and signs and symptoms due to traditional treatment. Delayed presentation and improper treatment can lead to wound infection, abscess, compartment syndrome, necrotizing fasciitis and gangrene.

Conclusion: Snakebite is common in rural areas around the tropical world. Complications like compartment syndrome, necrotizing fasciitis and gangrene could develop following snake bite for which immediate surgical intervention is required to prevent loss of limb and life.

1. Introduction

Snakebites are common, especially in rural areas all over the world. Snake injects the venom into the body through the site of the bite. Snake venom could cause local tissue damage or systemic toxicity like myonecrosis, coagulopathy, and neurotoxicity (1). Local toxic manifestations of venom include excruciating pain and the appearance of immovable, tensely swollen, cold, and seemingly pulseless extremities. Those local toxic effects can manifest as abscesses followed by cellulitis and compartment syndrome which could cause ischemic damage to tissue (2).

2. Case presentation

A 40-year-old male presented to the ED of our hospital with a history of snake bites over the back of his left 5th finger 4 days back. According to the patient, the color of the snake was green however he could not mention other features of the snake. He had not received any vaccination or medication after the snake bite. He presented to the emergency room with complaints of swelling and throbbing pain over the back of his left hand and blackish discoloration of the little finger of the same hand as shown in Fig. 1.

On examination, Blood pressure was found to be 110/80 mmHg, Pulse Rate of 110 bpm, temperature of 101 F. On local examination, there was tense fluctuating swelling measuring of size 10×7cm over the dorsum of the left hand extending from the middle of the dorsum of the left hand to the medial edge of the left hand (Fig. 1 - white arrow). The swelling was associated with bluish discoloration of the overlying skin. The little finger was blackish in color extending from mid proximal phalanx to the tip of the finger (Fig. 1 - blue arrow). Laboratory findings showed a total leucocyte count of 18,000/mm^3 with neutrophils 90 % and lymphocytes 8 %. Serum creatinine was 1.1 mg/dl, urea 24 mg/dl, PT-24 s and INR was 1.2. Ultrasonological screening finding was suggestive of approximately 50 ml of heterogenous collection in the dorsum of the hand. Vascularity could not be assessed due to the unavailability of Doppler ultrasound. A provisional diagnosis of Abscess of the left hand with gangrene of the left 5th finger following the snake bite was made.

Hence, Incision and drainage were done under the wrist block. Approximately 50 ml of the purulent collection was drained and sent for

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Fig. 1. Preoperative finding at the emergency department.

culture. Then thorough debridement of the wound was done and necrotic tissue was removed as shown in Fig. 2. The wound was washed with a hydrogen peroxide solution.

The patient was given Tetanus prophylaxis and started on empirical antibiotics. After 2 days, a second look re-debridement was done for ischemic skin around the incision site and disarticulation of an ischemic little finger at the MCP joint was done as infection was under control which is shown in Fig. 3. The blood culture report showed the presence of *E. coli* and IV antibiotics was continued. Then after 9 days Split thickness skin graft was done to cover the defect over the dorsal surface of the left hand after a through wash of the wound and debridement of hyper-granulated tissue.

After 3 days of grafting, the dressing was opened and checked for graft uptake, and graft uptake was found to be satisfactory. On the 5th Post graft day stapler was removed. The post STSG wound was shown in Fig 4.

3. Discussion

Snakebite can lead to only the bite mark without clinical features, local manifestations around the bite site, systemic toxicity due to redistribution of venom and signs and symptoms due to traditional treatment (2). Snake venom contains various toxins including cardiotoxin, neurotoxin, myotoxin, haemotoxin, and nephrotoxin that can lead to cellulitis, wound necrosis, rhabdomyolysis, acute kidney injury, coagulopathy, paralysis of extremities, respiratory distress, cardiac arrhythmia (3). Snakebites frequently occur in the extremities with two-thirds of cases occurring in the upper extremities, as in our case bite was over the dorsum of the hand. The skin of the dorsum is very thin, with little subcutaneous fat tissue, and numerous superficial veins. The palmar surface of the hand has an extensive vascular network, snake bite of the hand is likely to cause systemic venom distribution (4).

The commonest clinical presentation is pain and swelling which is seen in 70.3 % of patients (5). The common signs and symptoms of wound infection, and cellulitis like erythema, warmth, and pain occur in the early hours to days (4). Although snake venom toxicity is infrequent, it can cause significant local tissue damage if not diagnosed timely and

Fig. 3. Post debridement and disarticulation showing granulation tissue.

Fig. 4. Post STSG showing graft uptake.

Fig. 2. Post-incision and drainage status of wound showing ischemic skin and finger (inside circle).

treated properly (6).

The local effect of toxin or inflammation leads to increased vascular permeability and fluid accumulation can raise the pressure in the tissue compartment, resulting in extremity ischemia and amputation similar to our case (7). Delayed presentation and use of traditional remedies in the management of snake bite wounds can lead to infection and further complications leading to amputation (8). In previous days, early removal of snake venom by surgical methods was recommended as immediate management (9) (10). However, recent studies recommend the administration of ASV followed by delayed debridement as a standard of care for snake bite wounds (11,12).

.To date, there are very few studies that have explored the clinical and laboratory profile of snakebite cellulitis and gangrene similar to our case where we could not study due to delayed presentation and limited resources in our hospital.

This case report has been reported in line with the SCARE Criteria (13).

4. Conclusion

In snakebite, cellulitis could be the only clinical manifestation. When cellulitis has progressed following a snake bite, complications like abscess, necrotizing fasciitis and gangrene could develop. For which immediate proper surgical intervention is required to prevent loss of limb or life. These complications can be minimized by early presentation and prompt management.

This case report highlights the consequences of negligence and delayed presentation to the hospital following a snake bite.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical clearance

Our center does not have ethical boards as it is a very small health center located in a rural area of Nepal.

Ethical approval

No code of ethics was violated in the management of this case and treatment was done for patient's symptoms. Ethical approval is exempt at our institute for case reports. Informed consent from patient can be provided if needed.

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Author contribution

Gyaneswhor Shrestha (GS) = Study concept, original draft writing.

Aashish Neupane (AN), Anurag Pokharel (AP), Shristi Rajbhandari (SR) - photography collection, Case summary writing

Rakshya Dhungana (RD) = study concept

All authors read the manuscript and approved the final manuscript.

Guarantor

Dr. Gyaneswhor Shrestha.

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N/A.

Conflict of interest statement

There was no conflict of interest.

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