

SHORT COMMUNICATION

A TALE OF A SNAKEBITE VICTIM FROM VICINITY OF BITE THROUGH THE HEALTH SYSTEM OF BANGLADESH

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Introduction:

Snakebite is health emergency in tropical low resource countries associated with premature death¹. The patients following snakebite try to get whatever treatment is available in the community and public health sector. In this communication we tried to gather as much information as possible about a fatal victim from the patient's party, health care providers and managers from community to different tiers of health care from Bangladesh.

Methods: Verbal interview by one of us (MAF). Initial interview was taken from father of the patient with verbal consent on 1st May 2021 at 19.30 hrs, with medical officer (MO) Shaheed Suhrawardy Medical College Hospital (ShSMCH), Dhaka on 1st May, with

consultant at Patuakhali district hospital (DH), Patuakhali on 1st May, with MO and consultant Patuakhali Medical College Hospital (MCH) on 19th May, MO and Upazilla Health and Family Planning Officer (UHFPO) Kalapara Upazilla health complex (UzHC), Patuakhali on 16th & 19th May 2021 respectively.

The event and the journey:

Master H, a 14-year-old student of IX grade, father Mr N, Village Tulatoli, Union Baniatali, Upazilla Kalapara (Kepupara), district Patuakhali. The GPS of Baniatali Union was recorded by Mr Didar of Malaria Research Group (MRG): Latitude 21.92228, Longitude 90.23935. History of bite at right great toe by a snake, local name 'Guiaa pora', entangled in a net (used for protection of chilly field) at ~10.00 hrs on 27th April 2021.



Fig.-1: Location of snake bite



Fig.-2: Offending snake Russell's viper, 'Guiaapora'

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The location was visited by UHFPO, Kalatali and photographs of the location were taken and topography seems to be grassy vegetable garden and is situated close to a canal (Fig.-1).

The immediate symptoms were local bleeding from bite site, burning and pain ('Jole purey jhay'). The snake was known in the locality due to its ferocious behavior by creating lots of 'hissing' noise, was cause of 7-8 deaths in the last 4-5 years by the same variety of snake.

First aid provided: immediate application of two tourniquet one below knee, one above knee by rope.

The patient was taken by his father in his lap to a 'Ohza' 50 yards away from the bite site, who provided some local treatment with pin prick, tied knot with a thread, recited some 'Mantra' ('Jhara'). Within few minutes a blister appeared and the 'Ohza' advised to go to the nearest hospital (Kalapara UzHC) 14 km from his house; on the way consulted another 'Ohza' who also gave treatment ('dari chaalan'). The first Ohza said that some poison came out ('bish naamse') whereas the 2nd 'Ohza' said there is no poison ('bish'). They went on and reached Kalapara UzHC in ~20 minutes by a motor bike; attending doctor gave an injection (unnamed) and referred the patient to Patuakhali District hospital (currently used as Medical College Hospital).

Information from duty doctor at Kalapara UzHC : A graduate and BCS 39th Medical Officer. At emergency, he had seen the patient who had a history of bite on right foot.

Local examination:

There are some redness and swelling. The area was wrapped loosely by cloths. He did not notice any fang mark or bleeding. A tight tourniquet was in place at mid-thigh, he shifted the tourniquet from mid-thigh to right leg - below knee, close to popliteal fossa. All vitals and O₂ saturation was normal.

He was told by the patient's parent that the patient was bitten by 'Guiaa pora' snake (Fig.-2). They brought the dead snake but he was not aware about what kind of snake it is. He thought that it might be venomous or non-venomous but at that time there was no features of "poisoning".

He gave order for the following drugs: I/V Hartmann's solution 1L drip Inj. Ceftriaxone 2 g I /V, Inj. Esomeprazole 1 amp. I/V, Inj. Dexamethasone 1 amp (5 mg) I/V. Then referred the patient to Barishal Sher-e-Bangla Medical College Hospital (SbMCH), Barishal. He knew that antivenom (AV) was available at his hospital; also informed that during his internship at SbMCH he treated 4-5 cases of snakebite with AV; there was no H/O severe reaction after AV administration and there was no death either. He told that 'seniors used to tell that usually we do not give

AV at Upazilla Hospital'. During the management, he did not discuss the case with other colleagues and was not aware what happened to the patient later on.

Arrived at Patuakhali District Hospital at 14.00 hrs (started journey at 11.00 hrs) by a motor vehicle, was admitted in the medical ward. 20 WBCT was positive. Meanwhile he had one episode of vomiting.

The size of the snake was ~36 inches long and 3 inches circumference. The party killed the snake, took the photograph available and was identified as Russell's viper. The specimen was not available during the interview and no one from the hospital told them to preserve it.

Ten vials of injections (AV) were given (from the hospital) and one purchased medicine may be Ceftriaxone. Tourniquet was removed at Patuakhali District Hospital almost after 5 hours after bite.

The patient was seen by an intern at unit II Medicine at Patuakhali MCH (DH), she did 'the 20 WBCT by taking blood in a syringe keeping it for 20 minutes and observing any non clotting (she never did it before, did by her own on guess, not sure about the method of 20 Min. WBCT)'.

She informed a senior IMO about the patient and worked in the evening. She 'gave AV- 10 vials in 100 ml over? 20 min, cannot remember, also gave?? 2 amps of adrenaline in the drip (not sure).'

As the patient was not under her unit of placement she was 'not aware of the patient- what happened to him'. 'She knew that snake was brought but she was accustomed of examining any brought specimen of snakes so did not record any photograph of the snake or patient'.

'She came to know from one of her peers that during ward round next day there might be a discussion and one senior asked who gave AV (she was scared whether she did any mistake by giving AV)'.

Next day more than 48 hours after admission during her office work, towards the end of her duty, she informed one of the faculties about the scanty micturition in the patient who advised to give another dose of AV and to seek opinion of a surgeon for increasing limb swelling who suggested referring the patient to Dhaka. She referred the patient to Dhaka Medical College Hospital (DMCH) at 14.30hrs on Thursday April 29. So the patient received two dosages of AV at Patuakhali (10 + 10 vials=20 vials, 48 hours apart).

The patient was communicable, noticed swelling of the leg and blackish discoloration over the toe and foot, and blisters increased in next two to three days (Figure: 3). There was bleeding from bitten lower lip (he did himself) during painful pricking at bite site by 'Ohza'.



Fig.-3: Blister and swelling of leg



Fig.-4. Congested and chemosed eyes

Over the next two days his condition did not improve and the patient was referred to Dhaka Medical College Hospital, Dhaka. Being a COVID hospital the doctors at emergency room (ER) of DMCH referred the patient to Shaheed Suhrawardy Medical College Hospital (ShSMCH) and was admitted on 30th April at 002.00 hrs (started for Dhaka on 29th April from Patuakhali).

One of us (MAF) had a communication with an Assistant Professor of Patuakhali Medical College at 18.00 hrs on 1st May 2021 ('initial reluctance to give AV by concerned team'). The patient was not taking enough food, had vomiting, found toxic on admission at ShSMCH, GCS ~13-14, BP 100/70 mm Hg, pulse 120 per minute.

Meanwhile he developed ecchymosis at different parts of the body- right lower limb, over right foot, trunk, and eyes were chemosed (Fig.-4), the patient was anaemic. He had few episode of blackish vomitus and since 18 hours had 3-4 episodes of melaena. His urine volume was scanty,

Information from duty doctor of ShSMC (MO and also from Assistant Registrar): serum K⁺ was 6.3 mmol/L, s. creatinine 6.1 mmol/L, TC WBC 25, 900/cu mm, platelet 9000/cu mm, ECG sinus tachycardia.

Meanwhile the patient developed respiratory distress and tachypnoea. One more dose of AV was given at ShSMC, two units of fresh frozen plasma were given, sodium bicarbonate 30 ml was given, and one unit of platelet was given. Foley's catheter was inserted- urine volume ~50 ml on catheterization. Oxygen was given, calcium gluconate injection was given. Inj. Meropenem and Moxifloxacin were started.

Haemodialysis was given at 17.30 hrs (for 2-2.5 hours), planned to have dialysis the next day as well. ICU bed was not available. Another 10 vials of AV had been planned for that night. So far there was no AV reaction. The source of AV was from Incepta Pharmaceuticals Ltd, Bangladesh.

The patient died at 22.45 hrs 1st May 2021, 108 hours after bite.

Cost incurred for the treatment:

Travel cost from home to Patuakhali via Kalapara by motor bike: Taka 500/=, Taka 3200/= for ambulance fare from Patuakhali to Dhaka, Taka 3000/= for purchasing medicine and investigation at Patuakhali, and Taka 2000/= for purchasing medicine at Kalapara (most of which was not used). Four to five family members accompanied the patient to Dhaka and stayed until death. Eight units of 'blood' of which six units were used costing Taka 60,000 (10,000 per unit). According to statement of the father 'he had spent 1.5 lacs to 2 lacs taka while managing the patient and bringing the dead body most of which was borrowed from relatives and friends'.

Since the morning of 1st May the patient's clinical condition was shared with unit in-charge of ShSMCH and Professor Robed Amin, Line Director NCDC.

Diagnosis: Russell's Viper bite, acute kidney injury (AKI), consumption coagulopathy (DIC), permeability/ leak syndrome.

Lessons learned from the tale of the patient from scene to different tiers of health care: Unsafe work place for rural farming, inappropriate first aid at the scene, attended by two 'Ohza' who referred the case to UZHC, quick arrival to UzHC; treated for sometime; could not assess the envenomation status and AV was not administered at UzHC, delayed initiation of AV on arrival at district hospital (medical college hospital), inadequate follow up and delayed decision for 2nd dose of AV, despite 'COVID lock down' could manage to arrive tertiary care hospital at the capital, delayed

repeat dose of AV again, inadequate critical care facility for non-COVID patient, non response/questionable response to AV, emergency transport and most of the management cost is from 'out of pocket'.

Conclusions:

There is ample scope to improve the prevention, providing first aid, provision of treatment of snakebite at UzHC, District hospital and Medical College Hospitals in Bangladesh. Community empowerment and engagement for prevention of snakebite and providing appropriate first aid following bite should be a priority need.

Conflict of Interest:

The authors stated that there is no conflict of interest in this study.

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Photo credited; Courtesy: Fig.-1 Location of bite by Dr. Chinmoy; Fig.-2. Offending snake Russell's viper, 'Guiaa pora', *Daboia russelii* by Dr. Emran and Dr. H M Nazmul Ahsan; Fig.-3 Blister and swelling of leg by Dr. Md. Asif Hasan and Fig.-4. Congested and chemosed eyes by Dr. Md. Asif Hasan

References:

1. WHO (2019). Snakebite envenoming a strategy for prevention and control.