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A rare snake bite in a child and its treatment process with regards to renal function

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ABSTRACT

Snake bite is one of the most important medical emergencies which leads a large number of people to treatment centers every year, hence, snake bites can cause immediate death of the patients. In the present report, while drinking water from the spring, an 11-year-old boy in a mountainous area was bitten in the face by a mature snake. In physical examination, bite hole was in the outer end of the eyebrow and right upper eyelid with swelling of the face, upper lip, and periorbital ecchymosis and bleeding from the bitten area and right eye and gum conjunctivitis. There were bloody secretions in the throat in assessing oropharyngeal, tongue edema and uvula and soft palate. Systolic blood pressure was 80 mm Hg, heart rate was equal to 110 beat/min, and respiratory rate was 12/min and the patient had no fever. There were coagulation disorders in emergency trials. After skin test and negative sensitivity symptoms, anti-venom was injected, the patient was discharged with stable situation. Renal function tests remained normal.

Implication for health policy/practice/research/medical education:

Snakebite poisoning is a major health problem in rural areas of arid and semi-arid countries in the world.

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Introduction

Snakebite poisoning is a major health problem in rural areas of arid and semi-arid countries in the world. According to the World Health Organization (WHO) estimation, at least 421 000 snakebites and 20 000 deaths occur worldwide after snakebite (1). Semi-arid ecosystems and dense forests of mountainous region of Zagros in Iran are the habitats of some species of poisonous snakes of viper's types. The poisoning caused by animal bites and venom is a serious threat to human life that can lead to death of the bitten person in the absence of appropriate and timely treatment (2). But in a study conducted in 2007 to 2014 by Astaraki et al, of 1115 death only one death has been reported in children (3). Mahmoudi et al reported none deaths have been occurred due to snake bites during 5 years in main health care centers in Shohada hospital (4). Although anti-venom injection is the principle in the treatment of snake bites, different circumstances of patients and other risk factors affecting the treatment, create difficult treatment challenges for the emergency physicians and clinical toxicologists (5,6). Due to the

rarity of high-risk bites, transfer of scientific information and treatment decisions can save mankind from the threat of death. Introducing a rare case of snake bites in the face, this report tries to transfer scientific and experimental findings in the treatment of similar cases.

Case Presentation

While drinking water from the spring, an 11-year-old boy in a mountainous area was bitten in the face by a mature snake. After walking and driving several kilometers, the patient referred to the first medical center, but because of lack of anti-venom, the boy was transferred to the general emergency room of Khorramabad Shohada hospital in Lorestan (South West of Iran). At the beginning, the patient was awake and oriented, without respiratory distress, and he complained of nausea and vomiting and severe pain in face. In physical examination, bite hole was visible in the outer end of the eyebrow and right upper eyelid with swelling of the face, upper lip, and periorbital ecchymosis and also presence of bleeding from the bitten area and right eye and also gum conjunctivitis (Figure 1).

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Figure 1. An 11-year-old boy in a mountainous area was bitten in the face by a mature snake.

There were bloody secretions in the throat in assessing oropharyngeal, tongue edema and uvula and soft palate. Systolic blood pressure was 80 mm Hg, heart rate was equal to 110 beat/min, and respiratory rate was 12 and the patient had no fever. There were coagulation disorders in emergency trials (Table 1).

Discussion

The study of demographic characteristics, treatment outcomes and prognosis of disease in adults and children (7,8) and a discussion of the risk factors affecting mortality and morbidity in bitten patients (9,10) specified the patient's high-risk condition, as a point that was unfortunately neglected in the primary medical center and emergency triage of general center. Factors affecting the intensification of bites in younger people and children are as the following entities;

- Bites place are in the face, neck or body or limbs' surface vessels
- Victims' activity and walking more than a kilometer after being bitten
- Hemoglobin less than 10 at the time of admission

- Poisonous snake species (hemotoxin or neurotoxin) and size and maturity of the snake.
- Nausea, delay between bites and anti-venom injection (11).
- Identifies the patient's bad prognosis.

Despite the presence of almost all of the risk factors in our patient, critical conditions were supposed for him. Hence, to treat and save the patient from death and to minimize the possible maims, these cases were considered as priority. First, the effect of snake toxins and tissue damage and the need to prevent the spread and further damage of the tissues by injecting a dose of anti-venom proportional to the degree of intoxication. Second, the edema progress towards head, face, and oropharyngeal and anticipating neck and chest conflict and the risk of pressure strangulation or aspiration, and chest and lung wall expansion restrictions; and consequently, respiratory arrest as well as the effect of pressure on veins and arteries and impaired craniofacial vascular drainage and brain damage. Third, controlling blood and coagulation disorders. Fourth, the possibility of direct damage to eye tissue caused by the toxin injection and its secondary infection.

At the first step, to control the snake toxin, actions were taken according to the WHO's guidelines of snake bites (6). Getting familiar with a variety of poisonous snakes in the region and assessment of clinical symptoms were reasons for hemotoxicity of the poison (10). After early measures and placement of reliable intravenous paths, and washing the wound and stabilizing the vital signs, and injection of 200 mg of hydrocortisone and chlorpheniramine as antihistamines, anti-venom was injected as specific treatment. Despite progressive swelling, ecchymosis, coagulation disorders and bleeding of bite place, and mucous membranes and pressure drop and tachycardia, severity of intoxication of grade 2-3 was

Table 1. Coagulation disorders in emergency trials

	4 h	8 h	16 h	24 h	36 h	48 h	72 h	96 h
PTT Second	48		38	24	40	35	38	32
PT Second	25		19	13	12	12	14	15
INR, ISI	3.6		1.8	1.1	1.0	1.0	1.2	1.5
WBC/ μ L	19400			15300		10400	9000	9000
Hb, g/dL	12.2	8.2	7.2	11.3*	9.9	8.2	10.6	11.2
Hct, %	36.6	24.6	21.9	33.6	29.3	27.4	35.1	37
PLT/ μ L	123000		131000	133000	126000	120000	130000	161000
Blood sugar, mg/dL	N	N	N	106	N	N	N	N
BUN, mg/dL	39			39	56	59	71	12
Cr mg/dL	0.9			0.8	0.7	0.6	0.7	0.6
Na, mEq/L	135	137	133	142	138	138	140	133
K, mEq/L	3.9	3.7	3.7	4.3	4.2	3.8	4.1	3.4
SGPT, IU/L				51		45		50
SGOT, IU/L				18		19		18
ALP, IU/L				168		170		165
LDH, IU/L				412				410

Abbreviations: Hb, hemoglobin; PT, prothrombin time; INR, international normalized ratio; WBC, white blood cell; BUN, blood urea nitrogen; Hct, haematocrit; LDH, lactate dehydrogenase; ALP, alkaline phosphatase; SGOT, serum glutamic oxaloacetic transaminase; SGPT, serum glutamic pyruvic transaminase; Cr, creatinine.

determined and 25 vials of anti-venom polyvalent was started for injections during 2 hours. After skin test and negative sensitivity symptoms, anti-venom was injected, the patient was discharged with stable situation. Renal function tests remained normal.

Conclusion

By injecting a dose of anti-venom can be avoided from tissue damage. This treatment strategy was the best solution for the patient. Renal function tests remained normal.

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Authors' contribution

All authors contributed to write the manuscript. All authors read, revised, and approved the final manuscript.

Conflicts of interest

The authors declare no conflict of interest.

Ethical consideration

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

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