

A TRADITIONAL MEDICINE PRACTICE IN SNAKEBITE

Uz. Dr. Hüseyin GÜRBÜZ 

Gaziantep Ersin Arslan Devlet Hastanesi Acil Tıp, Gaziantep/Türkiye

Prof. Dr. Hülya ÇİÇEK 

Gaziantep Üniversitesi Tıp Fakültesi, Tıbbi biyokimya AD, Gaziantep/Türkiye

Geliş Tarihi / Received: 21.06.2021
Kabul Tarihi / Accepted: 22.09.2021

Araştırma Makalesi/Research Article
DOI: 10.38065/euroasiaorg.625

ABSTRACT

Snakebite is one of the main causes of morbidity and mortality in Turkey, especially in rural areas. There are 41 snake species living in Turkey, 28 of which are non-poisonous and 13 are venomous. Of these 13 venomous snakes, 10 species are from the Viperidae family, 2 species from the Colubridae and 1 species from the Elapidae (Cobras) family and can be lethal with the venom they inject when they bite. The venom has mostly hematotoxic rarely neurotoxic effects. In addition to these effects, it also has cardiotoxic, myotoxic and nephrotoxic properties.

A 50-year-old female patient was admitted to the emergency department 30-40 minutes after her left hand was bitten by a snake bite from the second finger. The patient, who was conscious, agitated and restless, had ecchymosis, widespread edema, pain and tenderness at the wound site. The wound area was cleaned with an antiseptic solution, 80 mg Prednisolone, 20 snake antiserum, 100 mg ulcer and tetanus prophylaxis were administered in the emergency room. The patient was absorbed 80-90 cc of fluid and blood absorption from three different areas on the left hand using the cupping vacuum method, then a splint was taken and elevation was performed. In the examination of the patient 20 hours after the application, edema in the hand decreased, swelling decreased, limitation of movement disappeared and the patient had minimal pain. The blood parameters of the patient were checked and evaluated as normal. The patient was discharged in a healthy way after 40 hours of admission to the hospital, following control and follow-up.

As in our case, it should not be forgotten that besides all modern medical practices, cupping absorption therapy, which is a traditional medical treatment, is also very important in terms of supportive treatment and local tissue.

Keywords: Snakebite, cupping, traditional medicine, emergency department.

INTRODUCTION

According to the World Health Organization (WHO), traditional medicine is “a collection of knowledge, skills, and practices that can be explained or not based on theories, beliefs and experiences specific to different cultures and used to protect, diagnose, cure or treat physical and mental diseases, as well as to maintain good health” and has a long history. (1)

There are 2500-3000 species of snakes in the world, while about 1/3 of the snakes are venomous. Forty-one species of snakes live in Turkey, of which 28 are non-venomous and 13 are venomous. Snake venom has a complex structure consisting of a combination of many toxic proteins and enzymes. The poison has mostly hematotoxic and rarely neurotoxic effects. In addition to these effects, it also has cardiotoxic, myotoxic, and nephrotoxic properties. Depending on the severity of the toxin, local and systemic symptoms are observed in the patient. Local symptoms are gangrenous lesions such as pain in the bitten area, increased heat, hemorrhagic edema, ecchymosis, lymphangitis, and tissue necrosis while systemic symptoms include fever, nausea, vomiting, circulatory collapse, mild icterus, delirium, convulsions, and coma (4,5). Death can occur within 6 to 48 hours due to secondary infections, disseminated intravascular coagulation (DIC), neurotoxicity, acute renal failure, intracranial and pulmonary bleeding (6,7). The clinical picture may be accompanied by progressive anemia, leukocytosis, thrombocytopenia, hypofibrinogenemia,

failure in coagulation tests, proteinuria, azotemia (6). In mild poisoning (general condition is good, vital symptoms are stable, blood values are normal), supportive care is sufficient, while in severe cases, the administration of antiserum in the appropriate dose in a short time is very important in terms of mortality and morbidity (8). In cases of necrosis and compartment syndrome, urgent surgical treatment is required. Traditional and Complementary Medicine has been used in snake bites in a small amount and has been seen to improve in a short time. The use of traditional and Complementary Medicine has a long history. In this case report, we aimed to evaluate and present a case of snake poisoning brought to our clinic urgently and the treatment we applied according to the literature.

THE CASE

A 50-year-old female patient was admitted to the emergency department 30-40 minutes after being bitten on the second finger of her left hand because of holding the tail of a snake. There was ecchymosis, generalized edema, and sensation of pain at the wound site of the patient, who was conscious, agitated, and restless. In the emergency department, the wound area was cleaned with an antiseptic solution, then 80 mg prednisolone, 20 snake antiserum, 100 mg Ranitidine, and tetanus prophylaxis were administered. During the follow-up of the medical treatment, the patient was subjected to 80-90 cc of fluid and blood absorption from three different areas on the hand by cupping vacuum method. After blood and fluid absorption was applied to the patient by the cupping vacuum method, the splint was applied and the elevation was performed. The patient was taken to the emergency observation room for follow-up and treatment. During the physical examination, there was generalized edema and ecchymosis in the left hand, and movement restriction in the fingers. Systemic signs and symptoms, on the other hand, were nausea-vomiting, headache, weakness, sweating, and tremor, and GKS: 15 points, blood pressure: 140/80 mmHg, heart rate: 98/min, and regular. Respiratory rate was 22/min and fever was 36.3. Diabetes mellitus type 2 was present in the history of the case. Arterial blood gas analysis, urine analysis, electrocardiography, and chest radiography of the patient were evaluated as normal. In her treatment, inspirium air was enriched through a nasal cannula with 2 l/min oxygen. Prophylactically, sulbactam-ampicillin antibiotic treatment and 0.9% NaCl 100 mL/h crystalloid infusion were initiated. Ranitidine 100 mg I.V. as gastric protective treatment, Diclofenac Sodium 75 mg I.M. for pain and inflammation were initiated. Local antibiotics and anti-inflammatory pomade were used in the ecchymotic areas of the case. The wound was elevated and dressed with Eau Borique and Eau oxygenated water. Arterial Color Doppler flow image of the upper left limb was normal. But peripheral circulatory disorders were clinically considered due to discoloration (pallor), cyanosis (bruising), coldness in the skin, and weakening of the radial artery and ulnar artery pulse. For this reason, blood and liquid absorption were applied to the patient by cupping (Hijama) therapy (Fig.1, 2, 3). When laboratory tests of the case were examined, prolonged prothrombin time (PT) and thrombocytopenia caused suspicion of disseminated intravascular coagulation (DIC). During the examination of the patient 20 hours after the application, the edema in the hand decreased, the swelling decreased, the restriction of movement disappeared, and the patient had minimal pain (Fig. 4). The blood parameters of the patient were checked and evaluated as normal. The patient was discharged in a healthy way after 40 hours of admission to the hospital, following control and follow-up. The patient returned to his job after 24 hours of rest at home.

DISCUSSION

About 5% of major complications of snake bites develop due to enzymes, proteins, and inorganic components in snake venom (7,8). Thrombocytopenia, leukocytosis, glycosuria, proteinuria, hematuria, decreased fibrinogen, increasing prothrombin time and partial thromboplastin time may be observed due to the procoagulant effect of the toxin due to snake bite, which is associated with poor prognosis and mortality (9-11). The use of methylprednisolone is very effective in the treatment of angioedema, laryngeal edema, tachy-brady arrhythmias, and bronchospasm that may result in mortality (12). In our case, 60 mg of methylprednisolone was given intravenously to prevent worsening of the systemic blood values. In our case, despite the decrease in platelet count

and prolongation in prothrombin time, the cupping vacuum following bite provided a faster improvement in local edema and movement restriction. Because of this, it may be useful to make a cupping aspiration as soon as encountering a snake bite.

Tetanus prophylaxis should be applied to all cases exposed to snake bites, but the administration of prophylactic antibiotics is controversial, except in cases where there are local complications (10). The antibiotic to be selected should be one with broad-spectrum, effective on gram-negative aerobic bacilli, gram-positive aerobic cocci, and anaerobes (9). In our case, antibiotic prophylaxis was applied due to mild leukocytosis.

Enzymes in snake venom such as serine protease and arginine ester hydrolase which have the protein structure can activate the coagulation cascade, leading to DIC. After that, elongation in PT and aPTT from coagulation tests, decrease in fibrinogen, increase in fibrin destruction products, and decrease in protein C level may occur. Although these hematological disorders are usually mild, they can rarely lead to fatal complications such as intracranial, pulmonary, and intraabdominal hemorrhages (7-8). Thrombocytopenia, anemia, decrease in fibrinogen, elongation in PT, and aPTT caused us to consider hematological damage and DIC. Although the platelet count was low in our case, platelet infusion was not required since platelet clumping and functions were sufficient. But in such cases, blood products such as TDP can be used to correct the coagulopathic state (13).

Secondary hypotension may develop in systemic poisoning. Hypotension can regress by itself, as well as be fatal by repeating itself later. Passing of intravascular fluid to the interstitium worsens hypotension, causing the condition to go to shock (14). In the case we followed, hypotension developed, but there was no shock. Depression and ischemia in myocardial contractility observed in poisoning are other important conditions that can be caused by viper venom (13). Our patient's ECG results were stable. No cardiac symptoms were seen. Renal failure may occur secondarily due to myoglobinuria or hypotension, possibly under the direct effect of the toxin. In addition, DIC can also contribute to the formation of renal failure (14). Hematuria was not detected by urine dipstick test in our patient. According to the degree of poisoning in snake bite cases, ischemic damage begins with direct contact of the toxin to the tissues within the first two hours at the bite site, and local tissue edema occurs (14). Local tissue necrosis and the presence of systemic symptoms increase the duration of hospitalization. Local symptoms such as edema, ecchymosis, and gangrene may also occur. Due to a snake bite, the pain can be very mild, as well as throbbing. Acetaminophen may be sufficient for pain due to biting. But if there are signs such as severe pain, paresthesia, inability to get a pulse, and coldness, the patient should be evaluated for fasciotomy, taking into account compartment syndrome (2). Randomized controlled studies using cupping therapy are increasing in China, and these studies are accepted in various fields of science. Most studies appear to be beneficial on pain conditions, herpes zoster and other diseases (15). However, no previous studies have been conducted on snake bites.

In our case, necrosis began in the center of the bite area, hemorrhagic bullae were present around it, and hyperemia and ecchymosis were present in the periphery. Local enduration, ecchymosis, and hematoma decreased on the second day as we applied cupping absorption to the patient. No fasciotomy or debridement was scheduled for this patient. But due to discoloration of the skin (paleness), coldness, weakening of the radial and ulnar artery pulse, peripheral circulation disorder was considered clinically. For this reason, the cupping absorption method was applied. As an analgesic and anti-inflammatory, NSAIDs were administered due to severe pain. Local symptoms of the case responded to the applied treatment, and the symptoms diminished after 24 hours.

For necrosis that occurs at the wound site due to a snake bite, normal medical treatment of the patient should be continued, while local wound care should be applied. In our case, local treatment was applied and these applications caused a very relaxing clinical picture for the patient. In our case, the cupping absorption method was used as a very useful method after washing the bitten area with clean soapy water as soon as she was exposed to the bite.

Gold and Wingert (16) determined snake antiserum indications in their study and emphasized that antiserum therapy should not be routinely applied due to the risk of allergies and anaphylactic reactions but can be applied in patients with systemic poisoning or severe local tissue reaction. Before antiserum is applied, the skin should be evaluated by a sensitivity test, and antihistamines, corticosteroids, and adrenaline should be present during this treatment (17). As the snake that bit our patient could not be caught, information about its genus could not be obtained. But in our country, the species that causes the most frequent bites is the Viper (Viperidae) snake, thus "European-equine viper antivenom" was applied (18-20). In our case, antivenom indication was applied due to the detection of abnormalities in coagulation parameters and worsening of the clinical picture. There were no antivenom-induced complications in our case.

In conclusion, because of all these clinical features, snake bites should be considered urgent cases, and its treatment should be done with liquid electrolyte therapy, antibiotics, antihistamines, and tetanus prophylaxis, antivenom treatment should be determined according to clinical symptoms, coagulation parameters should be closely followed up. As in our case, we believe that in addition to all modern medical applications, cupping absorption therapy, which is a traditional medical treatment, can also be effective in terms of supportive treatment and local tissue protection, and will shed light on the studies to be done on this issue.

REFERENCES

1. World Health Organization. General guidelines for methodologies on research and evaluation of traditional medicine. Geneva: World Health Organization, 2000.
2. Büyük Y, Koçak U, Yazıcı YA, Gürpınar SS, Kır Z. Yılan ısırığına bağlı ölüm. Türkiye Klinikleri J Foren Med 2007;4:127-30.
3. Theakston RDG, Warrell DA, Griffiths E: Report of a WHO workshop on the standardization and control of antivenoms. *Toxicon* 2003; 41: 541-557
4. Bentur Y, Cahana A. Unusual local complications of *Vipera palaestinae* bite. *Toxicon* 2003;41:633-5.
5. Benvenuti LA, Franca FO, Barbaro KC, Nunes JR, Cardoso JL. Pulmonary haemorrhage causing rapid death after *Bothrops jararacussu* snakebite: a case report. *Toxicon* 2003;42:331-4.
6. Demir C, Atik B, Dilek İ. Yılan Isırığı Sonucu Gelişen Yaygın Damar İçi Pıhtılaşması ve Multi Organ Yetmezliği. İki Olgu sunumu *Van Tıp Dergisi* 2005;12:22-5.
7. Okur Mİ, Yıldırım AM, İnce B. Türkiye'de Yılan Isırmalarına Bağlı Zehirlenmede Tedavi Algoritması Oluşturulması. *Türkiye Klinikleri J Med Sci* 2012;32(3):775-81.
8. Theakston RDG, Fan HW, Warrell DA. Use of enzyme immunoassay to compare the effect and assess the dosage regimens of three Brazilian *Bothrops* antivenomes. *Am J Trop Med Hyg* 1992;47:593-604.
9. Isbister GK, Currie BJ. Suspected snakebite: One year prospective study of emergency department presentations. *Emerg Med (Fremantle)* 2003;15:160-9.
10. Boviatsis EJ, Kouyialis AT, Papatheodorou G, Gavra M, Korfiyas S, Sakas DE. Multiple hemorrhagic brain infarcts after viper envenomation. *Am J Trop Med Hyg* 2003;68:253-7.
11. Köse R. Yılan zehirlenmelerinin tedavisi: Yirmibir olgunun incelenmesi. *Ulusal Travma Acil Cerrahi Derg* 2007;13:307-12.
12. Benvenuti LA, Franca FO, Barbaro KC, Nunes JR, Cardoso JL. Pulmonary haemorrhage causing rapid death after *Bothrops jararacussu* snakebite: a case report. *Toxicon* 2003;42:331-4

13. Ertem K, Esenkaya I, Kaygusuz MA, Turan C. Our clinical experience in the treatment of snakebites. *Acta Orthop Traumatol Turc* 2005;39:54-8.
14. Reading CJ. Incidence, pathology, and treatment of adder (*Vipera berus* L.) bites in man. *J Accid Emerg Med* 1996;13:346-51.
15. White J. Snake venoms and coagulopathy. *Toxicon* 2005;45:951-67.
16. Macho JR, Schechter WP. Care of patients with environmental injuries. In: *Current Critical Care Diagnosis & Treatment*, 2nd edition. Edited by Bongard FS, Sue DY. International edition. New York, McGraw-Hill, 2002,875-877.
17. Gold BS, Wingert WA. Snake venom poisoning in the United States: a review of therapeutic practice. *South Med J* 1994;87:579-89.
18. Kramer JA, Pettit SD, Amin RP, Bertram TA, Car B, Cunningham M, et al. Overview on the application of transcription profiling using selected nephrotoxicants for toxicology assessment. *Environ Health Perspect* 2004;112:460-4.
19. Hsu KY, Shih HN, Chen LM, Shih CH. Lower extremity compartmental syndrome following snake – bite envenomation – one case report. *Changeng Yi Xue Za Zhi* 1990;13:54-8.
20. Dhabhar J, Mehta V, Desai N. Optic neuritis after a snakebite: A diagnostic dilemma. *Ochsner J*. 2021;21(1):90-92. doi:10.31486/toj.19.001



Figure 1



Figure 2



Figure 3



Figure 4