

Paresthesia and Convulsion Developing In A Child Associated With A Scorpion Sting; A Case Report

Duygu Kara

Erzurum Regional Training and Research Hospital, Anesthesiology and Reanimation Clinic, Erzurum, Turkey

***Corresponding author**

Duygu Kara

Email: drduygukara@yahoo.com

Abstract: A scorpionsting is a serious and life-threatening emergency emergent condition and is generally fatal in childhood. Heart, respiratory and nervous system complications may occur due to the effect of scorpion venom. The precise indications and using scorpion antivenin and other drugs in the treatment is still controversial. The cases should be observed in the emergency department and also should be monitored in the intensive unit against the possibility of development of systemic effects. In this study, a case of paresthesia and convulsion was detected on the 16 year-old child patient who had been monitored in the intensive care unit due to a scorpionsting is presented.

Keywords: Scorpionsting, paresthesia, convulsion.

INTRODUCTION

Very few of the approximately 1400 species of scorpion in the world are dangerous to humans. However, these are still a significant public health problem in Turkey due to its geographical position, climatic conditions and socioeconomic structure, particularly in the Southeast Anatolia region, where *Androctonus crassicauda* and *Leiurus quinquestriatus* represent the majority of such species [1]. Scorpion envenomation may sometimes take the form of pain and reddening in the area of the sting alone, but may also sometimes lead to life-threatening heart failure and pulmonary edema. Various therapeutic and monitoring regimens are recommended, since the epidemiological characteristics vary in different parts of the world [2]. Venom obtained from the species *A. crassicauda* is used by the Refik Saydam Hıfzısıhha Center as an antigen in the production of antivenom [3]. Mortality rates can be reduced through early antivenom and support therapy. Although the course is generally benign, mortality rates in the region of 10% have been reported in children, particularly due to cardiovascular and respiratory effects. Convulsions indicate poor prognosis, while young age, stings to the head and neck and multiple stings follow a more severe course. This report describes a 16-year-old patient brought to the emergency department with scorpion envenomation-related paresthesia and convulsion and monitored in the intensive care unit.

CASE REPORT

A 16-year-old male with no known history of internal disease was brought to our emergency department due to a scorpion sting to the anterior part of

the right leg 3 hours previously, and subsequent convulsion. We learned from his history that he had been sting by a scorpion 3 hours previously, that bruising was observed across his entire body approximately 20 min after the sting and that the patient had presented due to convulsions. Numbness had developed in the affected extremity, resolving after 15-20 min. The patient was admitted to intensive care. At physical examination his temperature was 36.2° C, heart rate 120/min, and arterial blood pressure 80/45 mmHg. An edematous, reddened cutaneous lesion 3x5 mm in size and raised above the skin was observed in the back region and on the anterior face of the right leg. Other system examinations were normal. Diphenyl hydantoin at a loading dose of 20 mg/kg followed by maintenance at 5 mg/kg per day was administered due to tonic clonic generalized convulsion lasting 10 min at the 2nd hour of monitoring and recurring twice thereafter at 20-min intervals. Complete blood count was within normal limits, calcium level was 8.2 mg/dl, glucose 124 mg/dl, AST 35 IU/L and ALT 30 IU/L. Electrocardiography (ECG), cerebrospinal fluid (CSF) investigation and blood gas were within normal limits. Cranial computerized tomography (CCT) and magnetic resonance imaging (MRI) were normal. Electroencephalography (EEG) revealed the presence of sharp and slow wave activity in the bilateral parieto-occipital region, more pronounced on the left side. Phenobarbital (in a 20 mg/kg loading dose and at a maintenance dose of 5 mg/kg) was added to the treatment, while phenytoin was tapered and discontinued. No further convulsions were observed and the patient was discharged with phenobarbital therapy on the 5th day of monitoring.

DISCUSSION

Risk factors for mortality following scorpion envenomation include the type of scorpion, its size (amount of toxin), age of patient (in particular, the toxin involved increases in a relative manner due to the low body weight in young children), the region affected (stings to the head and neck are more dangerous), multiple stings, being the individual first stung by the scorpion and the season involved [4]. Scorpion venom is cardio toxic, neurotoxic, hematotoxic and nephrotoxic and contains enzymes such as histamine, serotonin, phosphodiesterase, phospholipase, hyaluronidase and glycosaminoglycan. Instead of local reactions, it may therefore cause a clinical picture involving severe cardiac, neurological, hematological and respiratory symptoms, and even death. The effective cause of death is the toxic effect on the cardiovascular system and pulmonary edema. Local effects following scorpion envenomation include burning pain (excessive crying in very young children), erythema, swelling, paresthesia and itching, while systemic effects include cardiovascular, neurological and hematological system findings (sweating, muscle weakness, double vision, nystagmus, pulmonary edema, hypersensitivity, muscle twitching, increased saliva and sweat production, coagulation disorder, vomiting, priapism, coldness in hands and feet, pallor, tachycardia, hypertension, myocardial dysfunction, arrhythmias, pulmonary edema, shock, encephalopathy, convulsion, aphasia, disseminated intravascular coagulation, respiratory failure and hypotension) [4].

Not all scorpion stings may result in envenomation. However, treatment must be planned on that assumption. Death is generally observed in the first 24 hours. Neurological symptoms may sometimes last for 7 days. In our case there were no local findings with the exception of a raised cutaneous lesion with a surrounding red flare 3x5 mm in diameter on the back and the anterior face of the right leg and post-sting paresthesia. In addition, no systemic findings other than convulsion were observed. These were brought under control with antiepileptic therapy.

State of consciousness, airway openness, respiration and circulation should be assessed in patients presenting due to scorpion stings. Vital signs should be monitored and ECG and blood gases evaluated. Extremity examination must be performed and peripheral pulses are checked [1]. The wound must be cleansed as soon as possible by washing the region stung by the scorpion with NaHCO₃, KMnO₄ or water; this is not necessary in the absence of any local findings after 48 hours, and particularly after 4 days [1, 5]. The patient and the affected extremity must be kept immobile. Bandaging should be performed at intervals to prevent diffusion of the venom. The bandage may be released in 4-8 hours and when antiserum is

administered. Application of cold packs (10-15°C) at 1-2 hour intervals may be beneficial. Care must be taken to avoid cold injury. Hypothermia prevents diffusion of the toxin and protects against anaphylactic reaction. However, this must be initiated in the first minutes after envenomation. After the basic approach, treatment consists of two steps. The first is antivenom therapy, and the second supportive therapy. Antivenom therapy is controversial due to the risk of allergy-anaphylaxis. Despite research into which patients should or should not be given antivenom; antivenom therapy must be administered as early as possible in a setting permitting intervention in the event of potential allergic complications in child patients. The course of scorpion envenomation is slower in children than in adults. Appropriate electrolyte intake must be provided in supportive therapy. Antibiotics, tetanus toxoid, scorpion serum, analgesics for pain reduction and calcium gluconate for muscle spasm may be given when required. Patients with systemic findings must also be given oxygen support, and respiratory support when necessary. Nifedepine, digoxin, furosemide, aminophylline, dopamine, dobutamine, vitamin K and fresh frozen plasma may be administered in cases with pulmonary edema, neurotoxicity, circulatory insufficiency or hematological findings, and phenobarbital and diazepam in cases with convulsion. The main neurological symptoms seen in scorpion stings are motor hyperactivity, incoordination, myoclonic jerks and opisthotonos [1]. Other findings that may be seen include altered consciousness, convulsion and intracranial infarct. Vital signs, airway openness, respiration and circulation must be evaluated in cases involving convulsion. Phenobarbital may be administered with care in an anticonvulsant dose. Ten percent calcium gluconate may be administered intravenously and gradually at a dose of 5-10 cc for muscle spasm [1, 6, 7]. Although convulsion is infrequent following scorpion stings, care must still be taken and appropriate treatment must be provided.

CONCLUSION

In conclusion, the only invariable in scorpion stings is the fact that early treatment is the most important factor determining morbidity and mortality. Although no major complications developed in this case, scorpion stings are still a significant public health problem with high mortality. Instruction aimed at preventing scorpion stings, precautionary measures and the presence in hospitals of antivenom, which has been shown to significantly reduce mortality, will all be life-saving.

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