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AUTONOMIC STORM CAUSED BY BLACK SCORPION STING –A REPORT FROM KERALA

General Medicine

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ABSTRACT

Scorpion stings are a major health problem in India and the incidence of serious envenomations are very high. Among the different species of scorpions available, the Indian red scorpion and black scorpion are medical of importance in India. Its venom is water soluble, antigenic and consists of a heterogeneous mixture of cardiotoxins and neurotoxins. Scorpion envenomations are a life threatening time limiting emergency. Although adults are more often stung, the fatality rates are high in children because of their lower body mass. Scorpion sting causes a wide range of clinical symptoms ranging from severe local skin reactions to neurologic, respiratory and cardiovascular collapse. Most of the envenomations results in acute painful local reaction that can be treated with local analgesics. But some cases become fatal where death occur secondary to cardiac or respiratory failure. We present a case of 25 year old lady with features of neurotoxic envenomation.

KEYWORDS

INTRODUCTION

25 year old lady from malappuram with no premorbid illness presented with history of unknown bite to dorsum of right foot,2hrs after which she developed difficulty in swallowing and was brought to emergency department.On examination she was conscious with excessive sweating.She had tachycardia with pulse rate-114/min,irregularly irregular.BP-200/100mmHG,Respiratory rate-24/min.She developed respiratory arrest, was intubated.She had nystagmoid jerks in eyes,involuntary movements of tongue and jerky movements of all limbs.Deep tendon reflexes were preserved.Cardiovascular and respiratory systems were within normal limits.Local examination at the site of bite revealed swelling with brownish discolouration.Initially a possibility of neurotoxic snake bite considered and antisnakevenom administration initiated.Later the bystanders recovered numerous scorpions from the surroundings.Investigations revealed mild leucocytosis in hemogram,hyperglycemia,Renal and liver function tests,serum electrolytes and urinalysis were within normal limits.ECG showed ventricular ectopics.Prazosin 2.5 mg was given in view of autonomic instability.Her hypertension controlled.She became conscious after 8 hrs,was extubated the next day.Deranged blood sugars normalized.She had excruciating pain at the site of sting which persisted for 1 week.She also developed cellulitis at the site of sting,treated with antibiotics.

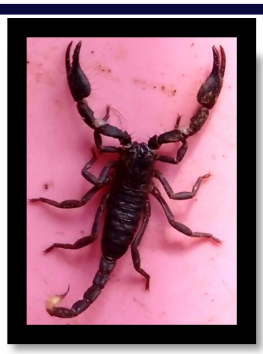
DISCUSSION

Scorpions are venomous arachnids belonging to the order Scorpionida, which are capable of inflicting fatal stings. They commonly inhabit the crevices of dwellings, under logs, paddy husk, coconut and banana plantations. Most of the species are nocturnal in habit, hiding under stones and seek cool and moist areas. Being shy creatures, they usually emerge at night which explains the reason for stings after dusk. Almost all the stings are accidental in nature as they sting for self defence or when provoked. Scorpion stings are more often encountered in summer months than in winter and most of the incidences were reported from rural areas, which correlate well with their natural habitat. Indian black scorpion, which belongs to the family scorpionidae and, is known for its neurotoxicity. The venomous apparatus consists of a venom vesicle comprising of a pair of joined glands in the telson, the last segment of the abdomen. This venom vesicle is surrounded by a striated muscular layer which facilitates and regulates the ejection of venom. This explains the variation in the intensity of the symptoms and the dry stings, i.e., stings without inoculation of the venom. The main toxins include acetyl cholinesterase, hyaluronidase, phospholipase, serotonin and certain neurotoxins. Phospholipase A, causes gastrointestinal and pulmonary haemorrhages, and disseminated intravascular coagulation. The venom affects sodium channels with prolongation of action potentials and spontaneous depolarization of both adrenergic and parasym pathetic nervous systems, giving rise to both adrenergic and cholinergic symptoms. Hyperkalemia, hyperglycemia (with reduction in insulin secretion), and increased secretion of renin and aldosterone are also seen. A person who has been stung by scorpion may get intense local pain, erythema, tingling or burning, and occasionally discoloration and necrosis Cardiovascular manifes tations are prominent in Indian red scorpion stings. It includes serious clinical sequelae like myocardial infarction, acute pulmonary oedema, cardiac arrhythmias, toxic myocarditis, cardiogenic shock . Other reported features include oliguria due to acute renal failure, disseminated intravascular coagulation, priapism, pancreatitis, seizures and cerebral infarctions in children. Overstimulation of the sympathetic system increases blood levels of catecholamine's, resulting in a characteristic "adrenergic (autonomic) storm" which consists of cardiac (tachycardia, peripheral vasoconstriction, hypertension, diaphoresis), metabolic (hyperthermia, hyperglycemia), urogenital (bladder dilatation, urinary retention, ejaculation in males), respiratory (bronchial dilatation, tachypnoea), and neuromuscular (mydriasis, tremor, agitation, convulsions) complications.

Scorpion antivenom (SAV) is specific treatment of scorpion sting's therapy,is not easily available in tropical countries and has been a matter of debate and controversy during last five years. Boyer V et al found that intravenous administration of antivenom resolved the neurological manifestations within four hours. SAV decreased the levels of circulating unbound venom. Alpha receptors stimulation plays an important role in the pathogenesis of scorpion sting. Prazosin is a phosphodisterase inhibitor, it reduces preload and left ventricular impedance without raising heart rate.It is a physiological antidote to scorpion venom actions, it is easily available at rural setting. In an experimental study support that scorpion sting involvement of peripheral alpha-1 adrenergic receptors for pressure response this is the reason why prazosin an alpha-1 blocker has been successfully used to reverse the toxicity. Angiotensin converting enzyme inhibitor captopril improves the diuretic induced pulmonary edema and cardiogenic shock due to scorpion sting.



Picture 1 –showing the local reaction at the site of sting



Picture 2 showing the black scorpion

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