Severe Scorpion Envenoming Results in Acute Myocardial Infarction

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ABSTRACT

Mesobuthus tamulus (an Indian red scorpion) flourished all over coastal region of India. Its venom is neuronal sodium channels activators. Envenoming by red scorpion evokes autonomic storm. Severe cardiovascular manifestations occurred as a result of high circulating catecholamines. We report a case of severe scorpion envenoming who suffered of autonomic storm and subsequent acute inferior wall myocardial infarction, lethal ventricular arrhythmias. He recovered with intravenous scorpion antivenin, oral prazosin, and intravenous bolus of 30 mg tenecteplase.

Keywords: Myocardial infarction, prazosin, scorpion, scorpion antivenom

INTRODUCTION

Mesobuthus tamulus (An Indian red scorpion) flourished all over India. Its venom delays the closing of neuronal sodium channels, result in sudden pouring of endogenous catecholamines result a “Autonomic Storm.” Fatality is due to severe cardiovascular manifestations characterized by refractory pulmonary edema and multiglands failure. Since the advent of prazosin and scorpion antivenom the fatality is dropped to almost negligible. We report here a case of severe scorpion sting developed acute inferior myocardial infarction, recovered with prazosin, scorpion antivenom and thrombolysis by tinectiplase.

CASE REPORT

On 8th November 2013, at 19.30 h, a 48 years old farmer while returning to the home was stung by read scorpion on dorsum left great toe. Immediately, scorpion was seen near by the patient and killed it was an Indian red scorpion (Mesobuthus tamulus). Soon after stung he experienced severe agonizing pain at the sting site. Bystander applied a tight tourniquet of the cloth strip to the left mid-thigh. He reported to casualty at 19.45 h. He removed the tourniquet due to discomfort. He vomited and sweated profusely from all over body. Casualty medical officer noted sweating literally flowing from all over body. Extremities were cold; blood pressure (BP) was 160/100 mmHg, pulse 58/min, local swelling at the sting site noted. Figure 1 showed minor ST changes. At 20.05 h, he received 1 mg prazosin and scorpion antivenom 70 mL by intravenous route (door to scorpion antivenom time was 20 min). He complained of severe agonizing chest pain radiating to back, he was tossing in bed due to chest pain and was admitted to intensive care unit. He smokes 12-15 cigarettes daily since the age of 15. One year back, he underwent right coronary angioplasty with stenting. He had continuous chest pain did not respond to nitroglycerine oral spray. He felt profound weakness in all four limbs with a feeling of impending death. BP 140/74, pulse 88/min, heart sound were muffled no murmur heard. No pain at sting site but sweating persisted, and extremities were cold. Electrocardiography (ECG) (Figure 2) acute inferior wall infarction. He was put on multi para monitor, nasal oxygen 4 L/min, intravenous pentazocin plus phenargan and oral clopidogrel and aspirin 300 mg respectively. Because of persistent ST elevated, and reciprocal changes, bolus of 30 mg tenecteplase was administered through anterior cubital vein (chest pain to needle time was 18 min). Authors Bawaskar and Bawaskar literally sat by the side of the victim and were closely monitored the vital parameters and ECG tracing was recorded whenever required. At the end of 1 h chest, pain disappeared accompanied with regression of elevated ST segment. Cold extremities and sweating persisted. At the end
of 20 min of regression of ST segment, he had severe chest pain radiating to back accompanied with mark elevation of ST segments. Progression or re-thrombosis was dissolved by intravenous bolus of 60 mg enoxaparin. The second dose of prazosin was administered. Suddenly developed persistent sustained ventricular fibrillation (Figure 3) was terminated by 100 J direct current shock. Subsequent regression of elevated ST segments to baseline was accompanied with nonsustained transient ventricular tachycardia (Figure 4) was treated with 150 mg intravenous amiodarone. He had persistent accelerated idioventricular rhythm for 4 h suggestive of reperfusion (Figure 5). Recovery of acute ST-T changes

He complained of severe intolerable pain at the site of sting responded to local lignocaine. Next day morning, QTc was 522 ms. Blood sugar, lipid profile, and renal profile were normal. Serum potassium 5.21 meq (N 3.5-4.5), sodium 123 meq (135-155), creatine phosphokinase (CPK)-MB 28.23 unit/L (<15). He undergone coronary angiography at Mumbai and showed thrombolysis in myocardial infarction (TIMI) Grade III flow in all coronaries with patient stent in right coronary (Figures 7 and 8). Echocardiography showed no regional wall motion abnormalities with left ventricular systolic ejection fraction 65%.

**DISCUSSION**

30% fatality due to pulmonary edema as a result of *M. tamulus* sting have been reported from Mahad region. Its venom delays the closing of sodium neuronal channel result in “autonomic storm” characterized by transient parasympathetic (vomiting, sweating, salivation, bradycardia) and prolonged sympathetic (hypertension, tachycardia, pulmonary edema, hyperkalemia, inhibition of
Thrombosis, re-stenosis, and progression of thrombus over ruptured plaque as platelets aggregation as a result of raised circulating free fatty acids due to inhibition of endogenous insulin by venom action.\(^2\) Primary ventricular tachycardia (Figure 3) is attributed to autonomic storm and hypoxic irritable myocardium due to chronic coronary disease.

The reappearance of local pain at the sting site due to vasodilatation by oral prazosin suggests recovery.\(^4\) The prolonged QTc is attributed to the depletion of myocardial catecholamine due to autonomic storm.

Tourniquet should not be released unless full dose of scorpion antivenom administered. Simultaneous administration of scorpion antivenin and prazosin hastened the recovery due envenomation.\(^5\) Timely administration of thrombolytic therapy dissolved the thrombus and its progression. Successful reperfusion confirmed by reperfusion arrhythmias, transient nonsustained ventricular tachycardia and accelerated idioventricular reperfusion rhythm (Figure 4). TIMI Grade III flow in coronaries further confirmed the complete dissolved of thrombus.

Possibility of coronary catastrophe should be kept in mind while treating a case of Indian red scorpion sting.

REFERENCES