Transient ST Segment Elevation following Indian Red Scorpion Sting with Non-Occlusive Right Coronary Artery Disease

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Abstract

A 50 y/o female developed transient ST segment elevation due to an acute coronary vasospasm following a Indian Red Scorpion sting and the angiogram revealed 50% occlusion in right coronary artery (RCA). The possible mechanism is that the sympathetic over-activity could have aggravated the occlusion in the RCA as the RCA is more commonly prone to spasm compared to the other coronary arteries.

Introduction

There have been very few case reports of acute coronary events immediately following a scorpion (Mesobuthus tumulus, Indian red scorpion) sting. These include acute myocardial infarction, acute pulmonary oedema, cardiogenic shock and in some instances death.1 The scorpion venom contains substances which are thrombogenic and inflammatory which can cause coronary spasm and cardiogenic shock.2 Coronary Artery Spasm (CAS) occurs due to a momentary increase in coronary vascular tone (vasospasm) of an epicardial artery, causing a transient but marked reduction in luminal diameter.3

Case Report

A 50 y/o female presented to the triage ward of our hospital within 30 minutes of receiving a sting by an Indian red scorpion in her right foot. She complained of severe pain at the bite site and also complained of giddiness. There was no chest pain or palpitation or dyspnoea. She was post menopausal with no significant prior medical illness. There was no family history of ischemic heart disease. On examination, she was conscious oriented afebrile and there was mild redness at the site of sting but there was no cellulitis. There was no evidence of cyanosis or anaemia in the patient and the supine blood pressure in the left upper limb was 160/90 mmHg with a pulse rate of 62/minute which was normal in volume and character and was felt in all the peripheral arteries. She had a respiratory rate of 16/minute with normal oxygen saturation and the random blood glucose (oxidase method) was 108 mg/dL. The electrocardiogram (ECG) taken immediately after admission revealed an ST segment elevation in leads II, III, and aVF (Figure 1). This ST segment elevation. ECGs taken after 10 minutes just showed a sinus bradycardia with a heart rate of 50/min with no changes demonstrated in the ST segments and T wave morphology (Figure 2). Complete blood count revealed a leucocyte counts of 7200/cumm, Haemoglobin 11.9 gm% and a platelet count of 1,90,000/cmm. Her lipid profile and whole blood clotting time was within normal limits. Troponin-T was negative and CPK-MB was 24 IU/L (significant if more than 25). The ECG taken 6 hours after admission showed a T wave inversion in leads V1-V6 (Figure 3). The T wave changes persisted in the ECG (Figure 4) taken on Day 2 and the Heart rate was 75/min and the blood pressure normalised to 110/70 mmHg in the supine position in left upper limb.

The echocardiogram done on the second day revealed a mild Hypokinesia of the inferior wall with left ventricular ejection fraction of 64 percent. On the second day also the cardiac enzymes were negative. The coronary angiogram done on the 3rd day revealed 50% stenosis in the right coronary artery with a normal left anterior descending artery and left circumflex artery (Figure 5). She was started on aspirin, clopidogrel, atorvastatin, and enalapril besides T. prazosin and paracetamol for pain relief. She was discharged after a 5 day hospitalisation and she has been asymptomatic for the past 18 months. Her ECG taken 8 months after the initial sting revealed the persistent T wave inversion changes in V1 - V6 (Figure 6).

Discussion

The various manifestations described due to a scorpion sting are myocarditis, myocardial infarction, acute pulmonary oedema, cardiogenic shock and sometimes even death.2 All these have been attributed to the water soluble complex antigenic mixture found in the scorpion venom. These vasoactive constituents can cause coronary vasospasm which may aggravate an already existing non-occlusive stenosis in the coronaries to progress to a transient occlusion lasting for a few seconds to minutes without damaging the myocardium as in the above case probably due to a transient adrenergic storm created by the sting. This was shown by the presence of 50% stenosis of the RCA (non-occlusive in normal individuals) on the third day of the sting which could have gone into momentary spasm causing the various ECG changes mimicking acute inferior wall myocardial infarction.

The vasospastic process almost always involves large segments of the epicardial vessels at a single site but other sites may be involved at different times. The right coronary artery is the most frequent site, followed by the left anterior descending coronary artery. Simultaneous spasm of all three

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major coronary arteries may mimic three-vessel atherosclerotic disease. The ECG changes normalized within 10 minutes without any enzymatic evidence of myocardial damage and the patient continued to be asymptomatic 18 months after the initial sting. There are no case reports till date reporting this transient ST segment changes soon after the scorpion sting though there are few case reports about the occurrence of myocardial infarction and other cardiac manifestations. The early initiation of antiplatelets and statins could have stabilised the atherosclerotic plaque limiting the occlusion to only 50% in this patient.

**Conclusion**

It is emphasized that ECG should be taken immediately after a scorpion sting and appropriate measures to treat the envenomation should be followed.

**References**

1. Maheshwari M, Tanwar CP. Scorpion bite induced myocardial damage and pulmonary oedema. Heart Views 2012;


