Case Report

Myocarditis and Multiple Cerebral and Cerebellar Infarction Following Scorpion Sting

MK Jain *, M Indurkar **, V Kastwar***, S Malviya***

Abstract
An unusual case of scorpion sting followed by multiple cerebral and cerebellar watershed infarctions is being reported. Myocarditis, hypotension and hypoperfusion infarction is being considered as the possible explanation for this pathology. Hypoperfusion leading to parieto-occipital infarction has been reported earlier, however cerebellar infarction in this context is extremely rare. ©

INTRODUCTION
Scorpions belonging to the family Buthidae are toxic to man. Palamneous gravimanus inflicts painful sting with mild systemic envenomation while Mesobuthus tamulus (Indian red scorpion) produces minimal local pain but severe systemic toxicity. A number of clinical cardiovascular and nervous system dysfunctions are observed as a result of the released neurotransmitters – Myocarditis, arrhythmias, heart failure, hypertension and pulmonary oedema are commonly seen, whereas wide fluctuations in blood pressure leading to cerebral haemorrhage and infarction are rare. Hypotension leading to watershed infarction is most commonly observed in the border zones between the anterior, middle and posterior cerebral artery territories; the parieto-occipital region being the most commonly affected as it represents the terminal vascular supply of all three major supratentorial circulations.

CASE REPORT
A 35 years male mason was bitten by a brown coloured scorpion, on his left buttock while working. There was mild local pain and irritation. Soon he developed uneasiness, excessive sweating, 3-4 episodes of vomiting and inability to sustain posture in the standing position. He was brought to the hospital 6 hours after the sting.

There was no history of cough, breathlessness or palpitation. On examination, he was drowsy and responding to vocal commands sluggishly. His extremities were cold. Pupils were dilated and reacting to light. His pulse was feeble with a rate of 102/minute. All peripheral pulses were palpable. Blood pressure was 90/80 mm Hg. Lung fields were clear. Auscultation revealed presence of S4 gallop. Neurological examination revealed mild right sided hemiparesis, extensor plantar response and left sided cerebellar signs. Routine haematological examination (haemoglobin, total and differential leucocyte count), bleeding time, clotting time, blood biochemistry (sugar, creatinine, liver function test), skiagram chest, thoracic and abdominal ultrasonography were normal. Serum electrolytes revealed mild hyperkalemia (K+=5.75 mmol/l) and hyponatremia (Na+=134.8 mmol/l). ECG showed sinus tachycardia (104/min), QRS axis +70°, q waves and ST elevation in V1-V3, T wave inversion in aVL and QTc of 0.44 second (Fig. 1). 2D-echocardiography-colour Doppler study revealed hypokinesia of interventricular septum, apex and apicolateral wall with moderate mitral regurgitation and reduced ejection fraction (31%). CT-scan brain (non-enhancing) showed multiple infarcts involving the cerebellar, parieto-occipital and thalamic regions (Figs. 2, 3 and 4).

The patient was hypotensive with low urine output. He was given symptomatic treatment including steroids and inotropic drugs. There was adequate response to therapy and his blood pressure improved in the next 36 hours. After 7 days, ECG changes and 2D-

Fig. 1 : ECG showing: rate 104/minute, sinus rhythm, PR interval-0.14 second, QRS axis +70°, duration 0.08 second, QS complex and ST elevation in V1 - V3, T wave inversion in aVL and QTc of 0.44 second.
Echocardiography became completely normal. However, patient noticed deterioration in his vision. Right-sided hemiparesis, residual dysarthria and left-sided cerebellar signs persisted.

**DISCUSSION**

The physical description of scorpion and clinical picture of mild local pain with severe systemic toxicity suggested that it was a *Mesobuthus tamulus* bite. The venom of this species contains polypeptides that affect cell membranes leading to influx of Na\(^+\) and Ca\(^{2+}\) ions through sodium channels. Stimulation of hypothalamus leads to massive outpouring of catecholamines leading to sympathetic and parasympathetic effects. Vasospsasm leads to hypertension and systemic hypoperfusion. Myocarditis is due to systemic toxicity. It can lead to stasis of blood in the cardiac chambers and subsequent thromboembolism. However in this patient, the absence of intracardiac static blood on 2D-Echocardiography and absence of signs of embolism to any other organ effectively precludes the possibility of embolism as the underlying cause of infarction. Most probably, hypotension caused by water-loss and myocarditis (probably associated with transient ventricular arrhythmia) precipitated hypoperfusion in the already compromised cerebral circulation due to vasospsasm. The bilateral multiple cerebral infarcts are compatible with the resultant ‘hypoperfusion infarction’.

Although cases of hypoperfusion infarction following scorpion sting have been occasionally reported; most cases were in the parieto-occipital and fronto-parietal regions. Cerebellar infarction, as in this case, is extremely rare.

**REFERENCES**