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ORIGINAL ARTICLE

**A CASE REPORT OF SEVERE ACUTE MYOCARDITIS AND PULMONARY ODEMA
FOLLOWING SCORPION STING**

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ABSTRACT

Scorpion sting are common in rural India as well as in other countries. Usually, these bites are harmless but sometimes have serious clinical sequale, including death. We report here in a case of scorpion sting that presented with acute severe myocarditis – a rare complication.

Keywords: Severe acute myocarditis, Pulmonary odema

1.INTRODUCTION

There are about 1500 species of scorpions worldwide, out of these 50 species are dangerous to human. Among 86 species in India, mesobuthus tumulus and palamnaeus swammerdami are of medical importance.¹

Almost all lethal scorpions except hemiscorpius species, belong to the scorpion family called Buthidae. The lethal member of Buthidae include genera Buthus, parebuthus, mesobuthus, tityus, leiurus, androctonus and centrurides.

Scorpions live in warm dry regions throughout India. They commonly inhabit the cervices of dwellings, underground burrows, underlogs (or) debtris, paddy husk, sugarcane fields, coconut and banana plantation.²

They hunt during night and hide in crevices and burrow during the day to avoid light. Scorpion stings increase

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Scorpion stings causes a wide range of manifestations, from local skin reaction to neurological, respiratory and cardiovascular collapse, cardiovascular effect are particularly prominent after stings by India red scorpion ie., *Mesobuthus tamulus*.³

2.CASE REPORT

An 18 year old girl was stung by a scorpion on the left thigh and right knee and presented with intense pain over bite region. Patient presented with history of breathlessness and profuse sweating. She got admitted in Rajah Muthiah Medical College and Hospital, Chidambaram, with heart rate (130/min) and her blood pressure (100/70 mmHg) in left upper arm in sitting position. Patient condition worsened at the time of admission and she developed acute pulmonary odema. Cardiovascular examination revealed tachycardia and loud S3 gallop at the apex, bilateral basal crepts were heard on auscultation. Symptomatic treatment was given. Gradually patient BP dropped to <90 / [systolic] mmHg and was patient immediately started with ionotropes ie. Dobutamine.

Laboratory results were as follows: Haemoglobin was 12.7 gm% white blood cell count was 6,600 cells/cumm; platelet count was $2.95 \times 10^3 / \mu\text{l}$.

Blood urea	:	31 mg/dl	:	
Serum Creatinine	:	1.1 mg/dl (0.6 – 1.2 mg/dl)	:	
Aspartate transaminase	:	11 μt	:	
Alanine transaminase	:	44 μt	:	
Creatinine kinase	:	40 μt	:	
Serum CK-MB	:	17 μt	:	

ECG taken on admission showed sinus tachycardia; ‘T’ wave inversion in leads I; AVL; ST ↓ depression in other leads (Fig. 1).

Chest X-ray showed bilateral fluffy shadows indicative of pulmonary odema (Fig. 3a).

2D Echocardiography revealed global hypokinesia of left ventricle with reduced ejection fraction (40%) Dilated LA and LV (Fig. 2 and 4).

In accordance with these symptoms and findings patient was diagnosed as a case of myocarditis with left ventricle failure with pulmonary odema. Patient was treated with prazosin (α blocker), dobutamine; frusemide and antibiotics with this treatment patient status was improved.

X-ray chest taken 24 hrs later showed clearing up of lung fields (Fig. 3b). Five ECG’s were reported over the period of IWK shows ST ‘T’ depression ‘T’ wave ↓ LI and AVL.

Repeat echocardiography taken shows: Normal Study

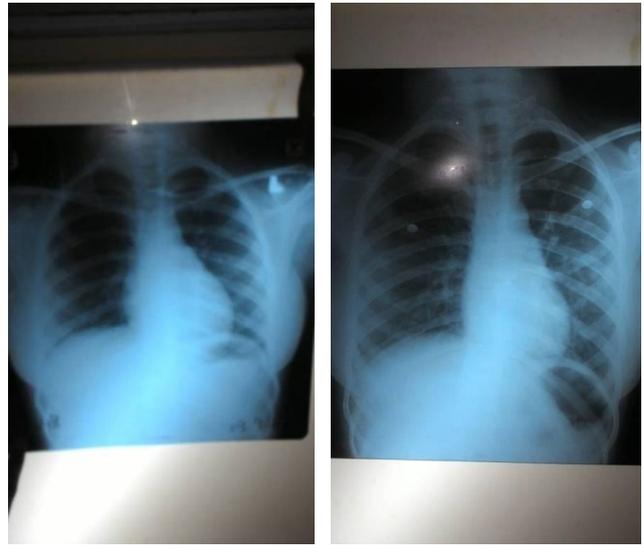


Fig. 3 (a) and (b) Chest X-ray

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DIVISION OF CARDIOLOGY
SCREENING ECHO REPORT

PRAVEENA Age 18 Sex F Date 06.09.15
588 Unit M5 Ward CCU Echo No 3910
Done by: Dr. E BALA
Window: Good

MITRAL VALVE		AORTIC VALVE	
Morphology	AML PML NORMAL	Morphology	TRICUSPID VALVE
MVA	Cont	Aortic Velocity	1.2 ms AD 2.8 cm LA 3.9 cm
LA Ratio	NORMAL	GR	NIL
MR	MILD	AR	NIL
TRICUSPID VALVE	NORMAL	PULMONARY VALVE	NORMAL
TR	NIL	PAH	NIL
Velocity	0.6 mt/sec	PR	NIL
RA	NORMAL DIMENSION	IASIVS	INTACT
RV	NORMAL DIMENSION	CONTRACTION ABNORMALITY	GLOBAL HYPOKINESIA OF LV
	EF: 40%		
LA	DILATED	PERICARDIUM	NO EFFUSION
LV	DILATED		

Comments if any:
Impression:
• MYOCARDITIS
• MR- MILD
• MODERATE LV SYSTOLIC DYSFUNCTION
• NO SIGNIFICANT PAH

Doctor's signature
Please Note: This is only a screening test and is to be always correlated with the clinical picture and other investigations like chest X-rays, ECG and studies especially in cases of complex congenital heart diseases. The measurement of each structure size are given only when they are abnormal. For excluding coronary artery disease, further, cardiac evaluation by Exercise test, Perfusion Imaging, Holter Monitoring, Coronary angiography may be required.

Fig. 4: Report of 2D ECHO

3.DISCUSSION

Scorpion venom may contain multiple toxin like neurotoxin, cardiotoxin, nephrotoxin and hemolytic toxin. The primary targets of scorpion venom are voltage dependent ion channels. The long chain polypeptide neurotoxin causes stabilization of voltage dependent sodium channels in the open state leading to continuous prolonged, repetitive firing of somatic, sympathetic, parasymphathetic neurons results in autonomic and neuromuscle over excitation over excitation symptoms due to release of excessive neurotransmitters such as epinephrine, nor-epinephrine, acetylcholine glutamate and aspartate.

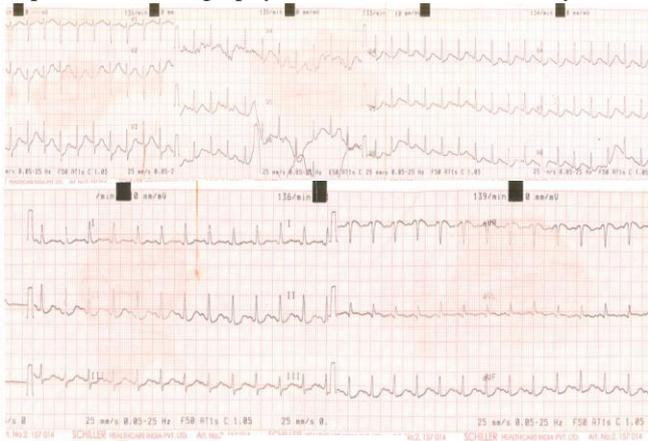


Fig.1 ECG

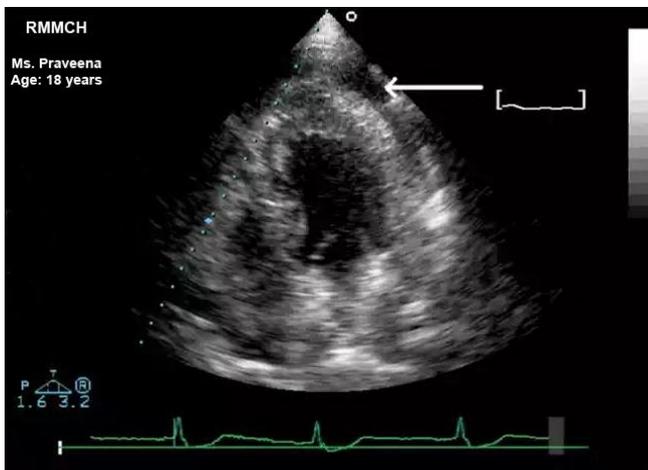


Fig.2 ECHO

The scorpion venom stimulates the peripheral sympathetic nerve endings and release of catecholamines from the adrenal medulla (directly as well as through parasympathetic stimulation). Thus the venom is powerful arrhythmogenic agent.

Scorpion bites usually have good prognosis. However, occasionally potentially fatal complication such as myocarditis, pulmonary odema and shock occur.⁴ Among these, myocarditis and resultant pulmonary odema are important causes of death.⁵ 'α' receptor stimulation by toxins play a major role in development of tachycardia, myocardial dysfunctions and pulmonary odema.

Unopposed α-receptors stimulation lead to suppression of insulin secretion, hyperglycemia, hyperkalemia, free fatty acid and free radical accumulation that are injuries to myocardium. Bahloul et al. examined the histopathological of two fetal myocarditis cases resulting from a scorpion bite. The pathologic conditions revealed a mixed picture of toxic myocarditis and coagulative myocytolipis, similar to catecholamine induced cardiotoxicity.⁴

Myocardial ischaemia is not only due to the release of catecholamines but also due to effect of cytokines and (or) neuropeptide Y on coronary vessels. Cardiac damage might be enhanced by the depressive effect of cytokines upon myocardial cells. Hyperglycemia may be also contribute to myocardial injury. We observed both ECG changes and myocarditis in this case.^{6,7,8,9}

4.CONCLUSION

We report here the case of 18 year old girl who developed life threatening, acute-toxic myocarditis and pulmonary odema after a scorpion sting. Initially patient treated with prazosin 'α' blocker Aggressive medical treatment with inotropic agents, diuretics resulted in rapid clinical resolution.

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