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CASE REPORT

From Hives to Recovery: Overcoming Multi-organ Dysfunction and Pancreatitis after Multiple Honey Bee Stings

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ABSTRACT

Background: Hymenoptera stings are common in India and can result in systemic envenomation with manifestations ranging from localized allergic reactions to life-threatening multiorgan dysfunction.

Case Description: We report a patient with multiple bee stings who developed acute as well as delayed complications of massive envenomation, including toxin-mediated multiorgan injury and acute pancreatitis.

Management and Outcome: The patient was managed conservatively in the intensive care unit. Despite a stormy and prolonged clinical course, he showed gradual recovery with a favorable outcome.

Conclusion: Massive bee envenomation can lead to severe systemic complications, including rare delayed manifestations such as pancreatitis. Early recognition and supportive critical care management are crucial for favorable outcomes.

KEYWORDS

• Multiple Honey Bee Stings • Envenomation • Anaphylactoid Reactions • Toxin Induced Multi-Organ Failure

Highlights: This case highlights a rare but serious presentation of delayed complications following massive envenomation. Markedly elevated LDH levels suggested extensive tissue injury and hemolysis while renal failure was likely multifactorial due to venom toxicity, rhabdomyolysis and hypotension.

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INTRODUCTION

Honeybees (Apidae) belong to the order Hymenoptera of Class Insecta. Beestings are commonly encountered worldwide. Local reactions are more common and self-limiting. Systemic reactions leading to multi-organ involvement[1] is rare and is associated with high morbidity and mortality. It is attributed to toxic effects of massive envenomation. In addition to direct toxic effects of venom, bee sting may cause hypotension as a part of anaphylactoid reaction, rhabdomyolysis followed by acute renal failure, hepatic dysfunction, intravascular hemolysis, myocardial infarction (Kounis syndrome),[2] respiratory and neurological manifestations. Written and informed consent was obtained from the patient for the purpose of publication.

CASE PRESENTATION

40Y/ male with no known comorbidities, addictions or history of any medications presented to emergency department (ED) with alleged history of honey beestings 30-40 at once two days back followed which had multiple episodes of vomiting, generalized body swelling, breathing difficulty, blood in urine since 2 days followed by decreased urine output since 1 day and fever since 1 day. Patient was well oriented to time, place and person on examination. On arrival the vital were pulse rate of 105 beats per min, blood pressure of 100/60 mmHg, saturation of 85% on room air which improved to 97% on 3 L/min of oxygen via nasal prongs, respiratory rate of 28 /min and oral temperature of 101 Fahrenheit. On systemic examination pallor & icterus was present, on auscultation bilateral crepts were present on auscultation. Local examination revealed multiple bee-sting marks over the trunk face and arms as shown in figure 1. Point of care ultrasound in emergency room revealed bilateral pleural shreds and B lines (Right > Left), adequate LV contractility and collapsed IVC.



Figure 1: Multiple bee-sting marks over the trunk

Patient was investigated and evaluated. Initial arterial blood gas was suggestive of severe metabolic acidosis with hyperkalemia.

Electrocardiogram (ECG) showed tall and peaked T waves (Figure 2)

Trop I was Positive and procalcitonin was 4ng/ml

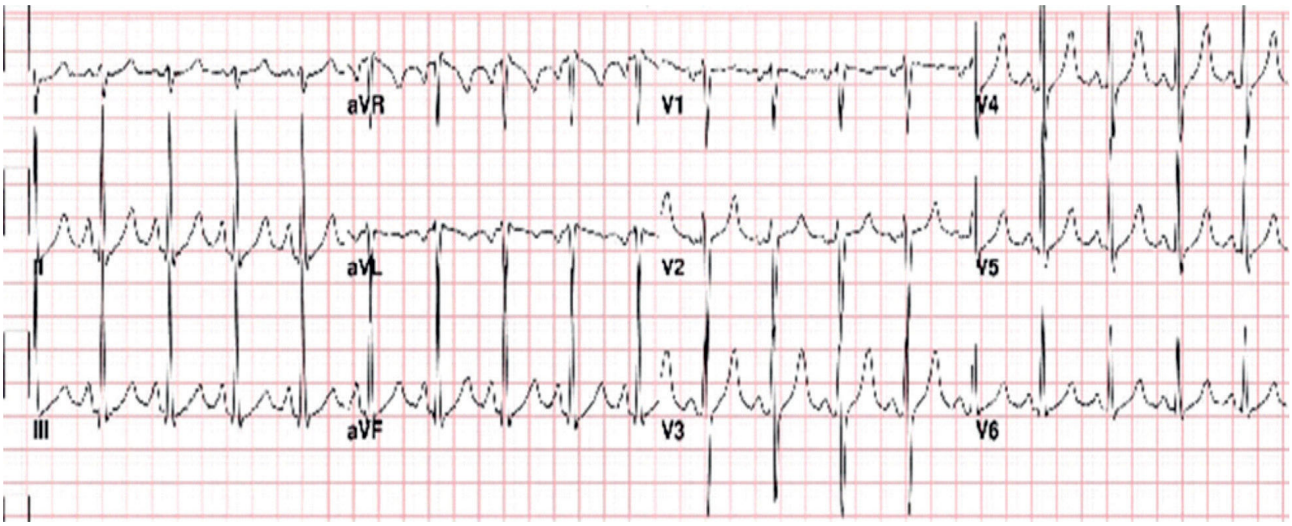


Figure 2: Electrocardiogram showing features of hyperkalemia

Chest X-ray showed bat wing appearance. Hence HRCT thorax was ordered which revealed features of pulmonary edema with active infective changes.

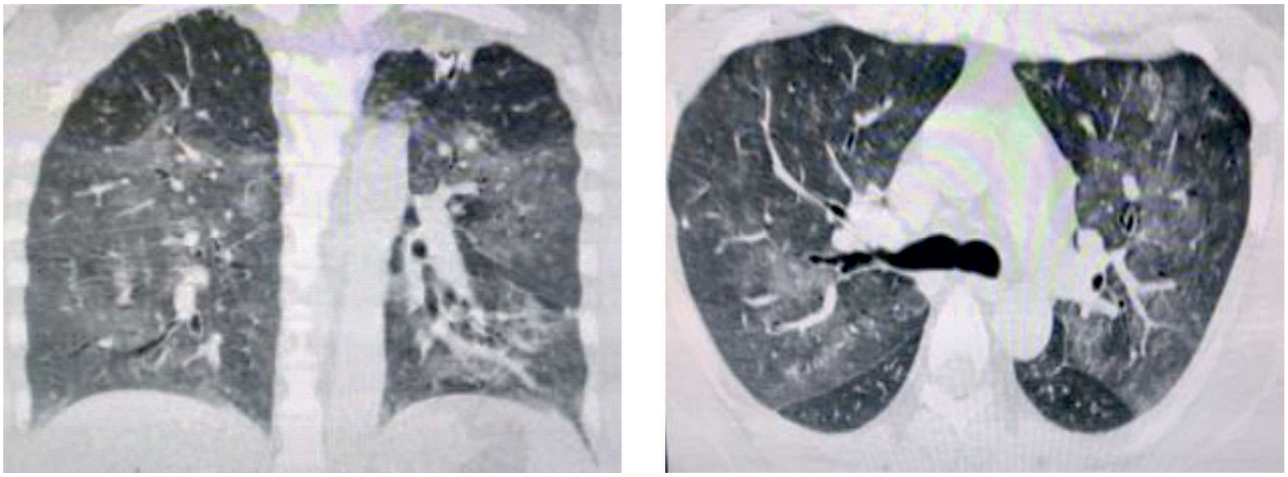


Figure 3: HRCT thorax was ordered which revealed features of pulmonary edema with active infective changes

Ultrasound whole abdomen was ordered which showed B/L raised renal cortical echogenicity and hepatomegaly with GB sludge.

Table 1: Laboratory investigations

Laboratory Parameters	Reference Range	Result
Hemoglobin (g/dL)	11.5-15	8.7
TLC (cells/mm3)	4000-11,000	30,500
Platelet count (thousand/mm3)	150-450	74
Serum potassium (mmol/L)	3.5-5.5	6.0
Serum sodium (mmol/L)	135-145	134
Creatinine (mg/dL)	0.5-1	8.67
Urea (mg/dL)	10-43	275
Total bilirubin (mg/dL)	0.3-1.2	1.37
SGOT (U/L)	< 35	130
SGPT (U/L)	< 35	60
Serum albumin (g/dL)	3.5-5.2	
LDH (U/L)	140-280	11420
CPK-NAC (U/L)	55-170	413

CBC = complete blood count; TLC = total leukocyte count; DLC = differential leukocyte count; SGOT = serum glutamate oxaloacetate transaminase; SGPT = serum glutamate pyruvate transaminase

Patient was admitted in emergency ICU and managed with IV antibiotics, iv fluids, nebulization, transfusion of two units PRBC, total 6 sessions of hemodialysis, 3 sessions of plasmapheresis and other supportive measures. A significant improvement was witnessed after plasmapheresis.

During the ICU stay on day 9 patient developed generalized abdominal pain with diffuse tenderness. S.lipase and S.amylase were ordered which were 568 U/L 331 U/L respectively. Computed tomography scan of the abdomen was done which was suggestive of acute interstitial pancreatitis.

Diagnosis of Bee sting induced haemolysis, rhabdomyolysis, myocarditis, pulmonary edema with lower respiratory tract infection and acute liver injury with acute pancreatitis was made.

Patient was managed conservatively and discharged on day 12 as the pt was symptomatically better and vitally stable with advice for maintenance hemodialysis and follow-up with nephrology department.

DISCUSSION

Honeybee stings are common in India and worldwide. They are known to cause local allergic reactions and anaphylaxis but systemic reactions leading to serious multiple organ dysfunction is rare. Severity of systemic reactions corresponds to the amount of venom injected. More the number of stings, more are the complications because of the inoculation of a higher amount of venom.[3] Severe systemic complications can include acute myocardial infarction, stroke,[4] immune thrombocytopenia[5] acute kidney injury (AKI)[6] and multiorgan dysfunction syndrome (MODS). Of these, stroke and MODS are quite uncommon. Our case is rare, as the patient had thrombocytopenia, anemia, myocarditis, lower respiratory tract infection, pulmonary edema which can be very well appreciated on chest x-ray and on

HRCT, along with acute kidney injury, acute liver injury and acute interstitial pancreatitis. Multi-organ dysfunction has been attributed to toxic effects of massive envenomation. Venom contains melittin, hyaluronidase, apamine, phospholipase A2, which can cause skin necrosis[1] at the sting site and rhabdomyolysis causing renal failure. The toxicity can be immediate or can manifest in days or weeks after the exposure. Cases have been reported that early institution of plasmapheresis and hemoperfusion may reduce mortality and morbidity that is associated with severe systemic envenomation[7] which we have witnessed in our case too.

CONCLUSION

This index case is unique in the way that multiple systems were involved and very few cases have been reported. Our patient developed thrombocytopenia, anemia, myocarditis, lower respiratory tract infection, pulmonary edema, acute kidney injury, acute liver injury and pancreatitis. He improved with conservative management with session of hemodialysis and plasmapheresis. We suggest that all patients with multiple honeybee stings should be admitted and kept under observation to monitor for development of delayed complications like pancreatitis in our case. In the primary care settings, all cases coming with multiple bee stings , a possibility of multi-organ failure should be kept in mind by the primary care physician especially if the number of bites range between 20–200 which can be clinically life threathening[8] and needs emergent care as it leads to kidney and other organ failures as described in our case.

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