Case Report

Bee sting induced multi-organ failure in an elderly male patient: report of a fatal case from Bangladesh

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ABSTRACT

Bee sting is common in Bangladesh especially in rural areas. It may cause simple local allergic reaction with single sting to multi-organ failure due to multiple stings even death. A 65-year-old male patient presented with altered-consciousness with anuria and diagnosed as multiple organ failure due to multiple bee stings. Investigation reports showed renal and hepatic impairment. After 2 weeks of hospital stay patient developed acute myocardial infarction evidenced by new onset of left bundle branch block with increased cardiac enzymes. He was shifted to coronary care unit and died due to cardiogenic shock. Though incidence of bee stings are common, multiple stings may cause multiple organ dysfunction even death.

***Key words**: bee stings, multi-organ dysfunction, acute coronary syndrome, Kounis syndrome.*

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INTRODUCTION

Envenomation or poisoning by toxins from animals poses an important health hazard in the topics and approximately 5 million snake bites, scorpion sting and anaphylactic reaction to insect sting occurs worldwide annually causing more than 100000 deaths each year, most of which happen in the topic.[1,2] Honey bee and black bee (Hornets) belonging to genus Apis group, are largely available in Bangladesh mainly in forest areas and different fields. Allergic manifestations due to bee stings are well known such as erythema, local oedema, pain and the systemic manifestations are rare and presented as systemic anaphylaxis reaction like generalized urticaria, angioedema, intravenous hemolysis, rhabdomyolysis, thrombocytopenia, disseminated intravascular coagulation, anaphylactic shock, acute kidney injury, hepatic aggression and myocardial infarction which may be life threatening. The allergic reaction can be triggered by a single sting and the greater the number of stings, the worse the prognosis because multiple stings lead to inoculation of a higher quantity of venom.[3] Although multiple organ dysfunction after bee stings are extremely rare, it may occur due to the direct toxic effect of venom following multiple stings and immune inflammatory reaction to venom composition, both of which can lead to organ failure and even death.[4] Mortality rates from multiple bee stings were approximately 15-25% in previously published studies. The effects of the poison can be systemic and can eventually cause death.[5]

Acute kidney injury (AKI) is determined by impaired renal function over period of hours and thus lead to the accumulation of nitrogen productions and electrolyte imbalance. In case of bee venom inoculation, a direct toxic effect on renal function has been observed and the renal function may be further worsened due to shock, rhabdomyolysis, hemolysis and direct tubular nephrotoxicity.[5,6] Acute myocardial injury is associated

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with mast cell activation involving allergic or hypersensitivity and anaphylactic or anaphylactoid reactions which may lead to Kounis syndrome. Patients may present with acute myocardial injury who had mild ST depression and T inversion in V_1-V_4 in 12 lead electrocardiography or may present with new onset left bundle branch block (LBBB) with cardiac enzyme abnormality. The hepatotoxic effects of bee stings are unknown. The postulated mechanisms are: 1) Venom damages hepatic cellular membranes and mitochondria are most severely injured and 2) Hypotension caused by anaphylaxis induces liver ischaemia.[7,8] In our case, a 65-year-old aged male presented with renal, hepatic and cardiac complications following multiple bee stings.

CASE REPORT

A 65-year-old non-diabetic, normotensive male got admitted with semi-consciousness, anuria and multiple erythematous black lesions due to black bee bite in lower abdomen and both thighs. He was a farmer and when he was working in sugar cane field, he was attached by multiple black bees. Initially he presented with erythematous lesion in the bite area of lower abdomen and upper thighs followed by erythematous blistering lesion and scarring associated with severe pain in bite areas and fever (Figure 1). After one day, his urine output gradually declined and became anuric. On admission, his was semiconscious with generalized body swelling and multiple erythematous blistering lesions. On examination, he was edematous with scrotal swelling. His vitals were stable (pulse 100/min, blood pressure 140/80 mm Hg) and lungs were clear.

Investigations showed increased total WBC count, haemoglobulin 11.4 gm/dl, serum creatinine 8.0 mg/dl, urea 257 mg/dl, serum sodium 128 mmol/lt, potassium 5.8 mmol/lt, chloride 95 mmol/lt, liver enzymes were grossly elevated (Table I). Considering his general condition and biochemical reports, haemodialysis was started through left sided femoral central venous catheter for 2 hours in first day followed by 4 hours in next day. Intravenous methyl prednisolone for 3 days followed by hydrocortisone 8 hourly and antihistamine were given alone with other supportive measures. Despite getting adequate management and regular dialysis, his general condition and urine output did not improve. After 2 weeks, he suddenly developed respiratory distress with decreased SPO2 (Figure 2). ECG showed new onset LBBB and serum troponin I was >50000 pg/ml. Cardiology consultation as taken and he was shifted to coronary care unit (CCU) and his condition gradually deteriorated with hypotension followed by cardiac arrest. CPR was given but ultimately, we lost the patient.

Figure 1. Multiple black scar following bee stings

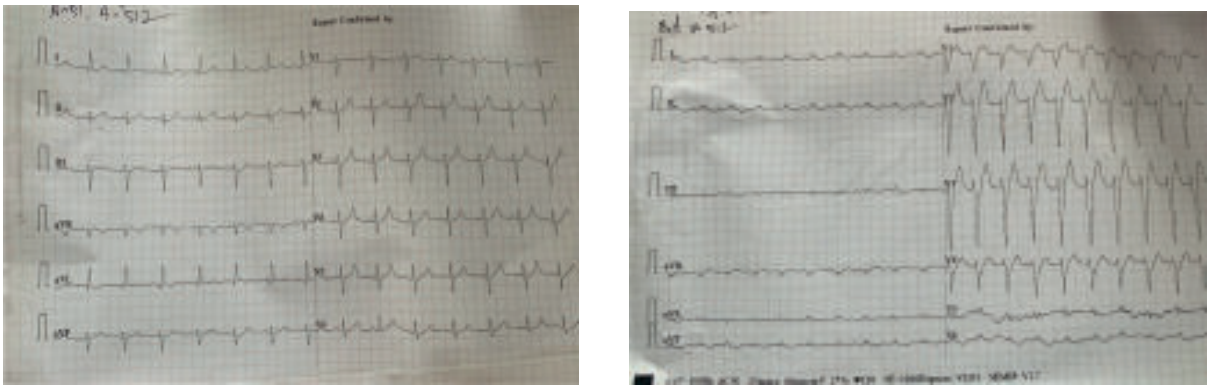

Figure 2. ECG changes (second one is showing new on-set LBBB)

Table I. Investigations summary of the patient with bee sting

Date	Hb (gm/dl)	WCC (/cmm)	Platelet (/cmm)	Urea (mg/dl)	Creatinine (mg/dl)	Na (mmol/L)	K (mmol/L)	ALT (u/L)	AST (u/L)	Bilirubin ((mg/dl)	CRP ((mg/L)	CPK ((u/L)
22/07/2022	11.4	35210	99000	257	8	128	5.8	517	420	1.5	4.9	
27/07/2022	8.9	18900	86000	368	10.2	129	5.6	68	54	0.9		1471
03/08/2022	8.8	20690	100000	292	106	135	4.6				202	

DISCUSSION

Bee venom consists a mixture of peptides and enzymes which causes allergic local reactions or systemic toxic reactions. It can rarely cause systemic manifestations such as anaphylaxis, myocardial injury, encephalitis, AKI and serum sickness which are rarely reported in literature.[4-5]

AKI occurs approximately after 24 hours of the bee sting, because of the excess amount of injected poison via stings. Clinical presentations may be nausea, vomiting, myalgia, joint pain, anuria, olguria, macroscopic hematuria and altered mental status due to direct toxic effects.[6] In our case, he presented with anuria followed by altered mental status, generalized edema, vomiting and generalized blistering lesion following multiple bee stings.

Acute myocardial injury is first reported as syndrome of allergic angina by Kounis and Zavas in 1991 which is associated with vasculitis event, platelet aggregation and thrombosis following release of vasoactive inflammatory mediators of anaphylactic reaction which cause myocardial ischemia and infarction (Kounis syndrome).[7] Our patients presented with respiratory distress with new onset LBBB after 14 days following bee stings. This was a delayed presentation of Kounis syndrome.

Although hepatic toxicity is very rare, it may damage hepatic cell due to venom which is cholangio-cellular type and it was self-limiting which may completely improve over a period of 8 weeks. In most of the cases, patient may recover with supportive treatment but some of them may need extensive treatment like intensive care support (ICU), dialysis and cardiac support with mortality rates as high as 15–25 percent.[8] In our case, patient needed few sessions of haemodialysis and after 2 weeks he developed cardiac complication and eventually died at CCU.

Conclusion

Bee stings are common, especially at rural areas. Clinical presentation is variable with relation to number of stings. Multiple stings may lead to multi-organ failure and even death.

Authors' contribution: MMEK managed the case and drafted the manuscript. All authors revised the manuscript critically and approved for submission.

Consent: Informed written consent was taken from the patient's attendant for publication of this case report and any accompanying images.

Conflicts of interest: Nothing to declare.

REFERENCES

1. WHO Weekly Epidemiological Record (February 2, 2002). Poisonous animal bites and stings. http://www.who. int/iris/handle/10665/229584 (25 November 2016, date last accessed)
2. Sitprija V. Animal toxins and the kidney. Nat Clin Pract Nephrol 2008; 4: 616–27.
3. Xie C, Xu S, Ding F, Xie M, Lv J, Yao J et al. Clinical features of severe wasp sting patients with dominantly toxic reaction: analysis of 1091 cases. PLoS One 2013; 8: e83164.
4. Mathew A, Chrispal A, David T. Acute myocardial injury and rhabdomyolysis caused by multiple bee stings. J Assoc Physicians India 2011; 59: 518–20.
5. Kounis NG, Zavas GM. Histamine induced coronary artery spasm: the concept of allergic angina. Br J Clin Pract 1991; 45(2): 121–8.
6. Silva GBD Jr, Vasconcelos AG Jr, Rocha AMT, Vasconcelos VR, Barros JN, Fujishima JS, et al. Acute kidney injury complicating bee stings- a review. Rev Inst Med Trop Sao Paulo 2017; 59: e25.
7. Lombardi A, Vandelli R, Cerè E, Pasquale GD. Silent acute myocardial infarction following a wasp sting. Ital Heart J 2003; 4(9): 638–41.
8. Laxmegowda, Ranjith V, Keerthiraj DB, Pradeep BK. Retrospective study on complications of bee sting in a tertiary care hospital. Int J Contemp Med Res 2018;5. doi: 10.21276/ijcmr. 2018.5.7.18.