

Multiple Organ Dysfunction and Acute Pancreatitis Following Wasp Stings

Olita Shilpakar,¹ Bibek Rajbhandari,² Bipin Karki,³ Umesh Bogati¹

¹Department of General Practice and Emergency Medicine, NAMS, Bir Hospital, Kathmandu, Nepal,

²Department of General Practice and Emergency Medicine, Nepal Police Hospital, Kathmandu, Nepal,

³Department of Critical Care Medicine, Om Hospital and Research Centre, Kathmandu, Nepal.

ABSTRACT

Wasp stings are common in our part of the world and may cause complications ranging from mild local reactions to fatal anaphylaxis. Severe cases may present with multisystem involvement causing acute kidney injury, hepatic dysfunction, clotting abnormalities, rhabdomyolysis or even death. However, cases with acute pancreatitis as a complication of wasp sting is not usual and have been very rarely reported. We present a case of a fifty-two-year-old lady with the history of multiple wasp stings followed by multiple organ dysfunction and acute pancreatitis with complete recovery following immediate conservative measures.

Keywords: Acute kidney injury; multiple organ dysfunction; pancreatitis; wasp; sting

INTRODUCTION

Wasps are stinging insects of the order Hymenoptera which comprises of Apoidea (bees), Formicidae (ants) and Vespoidea (wasps, hornets, and yellow jackets).^{1,2} A wide range of clinical manifestations may occur from mild local symptoms like pain and erythema at the sting site to multisystemic life threatening involvement like acute kidney injury, rhabdomyolysis, intravascular hemolysis, hepatic dysfunction and rarely, pancreatitis and anaphylactic reactions.³ This case is a description of a fifty-two-year-old female following multiple wasp stings resulting in multiple organ failure with an unusual complication like acute pancreatitis and its conservative management.

CASE PRESENTATION

A fifty-two-year-old female presented to the Emergency Room (ER) with the alleged history of being stung by a swarm of wasps, approximately 15-20 in number, as per the bite counts over her head, face, arms, hands and upper back while collecting firewood in the forest ten days back. The patient immediately had severe pain and burning sensation followed by redness and swelling of the affected areas. She was initially taken to a primary health care centre where she received intravenous fluids and an antihistaminic and was discharged on tablet Ibuprofen 400mg thrice daily for three days which she consumed for a few more days. Her symptoms worsened

over time and by day three she developed nausea, two episodes of vomiting, abdominal pain and yellowish discoloration of the sclera. Her urine colour changed to dark brown with a significant decrease in the output by day seven following which she was brought to our centre. She denied any history of seizures, difficulty in breathing or any bleeding manifestations. She was postmenopausal with no significant past medical illnesses.

On examination, the patient was drowsy and ill looking. Her radial pulse was 110 beats per minute, blood pressure 110/70mm Hg, respiratory rate 20 breaths /minute, temperature 99.2 degrees F and 94% oxygen saturation in room air. Multiple erythematous vesiculobullous lesions were noticed over the scalp, neck, upper thorax and upper limbs (Figure 1). Systemic examination did not reveal much except an icteric sclera and a soft but mild tender epigastrium with no guarding.

Her investigations showed hemoglobin 9.2 gm%, platelet count 120,000/mm³, leucocytosis with a total count of 23,000/mm³ and a deranged renal function with serum urea 236mg/dl and serum creatinine 6.9mg/dl. Hepatic dysfunction was evident with total bilirubin 38mg/dl, direct bilirubin 25mg/dl, aspartate aminotransferase (AST) 410 IU/L, alanine aminotransferase (ALT) 499 IU/L, alkaline phosphatase 580 IU/L, total protein 7.4 grams/dl and serum albumin 4.2 grams/dl. Her serum amylase and lipase levels were 806 U/L and 1120 U/L respectively. Other laboratory parameters showed serum creatinine

Correspondence: Dr Olita Shilpakar, Department of General Practice and Emergency Medicine, NAMS, Bir Hospital, Kathmandu, Nepal. Email: olitashilpakar@yahoo.com, Phone: +9779841256959.

phosphokinase (CPK) 1706 IU/L, lactate dehydrogenase (LDH) 534 IU/L, a normal coagulation profile, reddish brown coloured urine showing 3+ proteinuria, pus cells 6-8/high power field (hpf) and red cells 10-20/hpf without casts. Ultrasound of the abdomen showed normal sized kidneys with preserved corticomedullary differentiation, hepatomegaly with a liver size of 15mm, gall bladder sludge and a mildly inflamed pancreas.

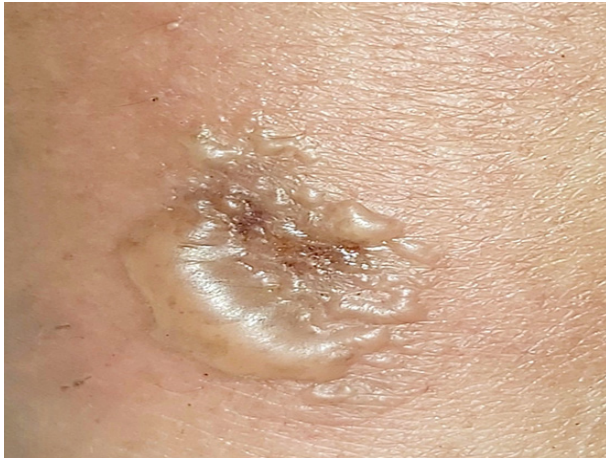


Figure 1. Figure showing an erythematous vesiculobullous lesion following wasp sting.

In view with the worsening renal function with progressive oliguria and metabolic acidosis in the arterial blood gas analysis, she was initiated on urgent hemodialysis via an internal jugular catheter. Three more sessions of hemodialysis were done following which the urine output started to increase. One week of strict hemodynamic monitoring with continuous supportive management was done which included intravenous fluids, broad spectrum antibiotics and antihistaminics. Her gastrointestinal symptoms resolved uneventfully, the hematological parameters, renal and hepatic function and the pancreatic enzymes gradually improved with a normal urinalysis, serum urea 65 mg/dl, serum creatinine 2.1 mg/dl, serum amylase 76 U/L and serum lipase 98 U/L. She was discharged from the hospital in good health.

DISCUSSION

Hymenoptera sting comprises of enzymes like phospholipase A2, hyaluronidase, histamine, serotonin, melittin, kinins and apamine.^{1,2} Wasp stings have been associated with mild localized pain and swelling to severe reactions ranging from acute urticaria and angioedema to laryngeal edema, hypotension or even death.^{1,3} Systemic complications resulting in multiple organ dysfunction syndrome may include acute kidney injury, hepatic dysfunction in the form of centrilobular necrosis, neurological complications like

stroke, myocarditis, or hematological complications like intravascular hemolysis, thrombocytopenia or disseminated intravascular coagulation.^{3,4}

Acute pancreatitis due to multiple wasp stings has been rarely reported. Fatal outcomes have been encountered following multiple organ failure and pancreatitis following a single wasp sting.^{4,5} Phospholipase A2 releases arachidonic acid from lipids in the cell membrane and initiates the production of inflammatory eicosanoids causing its disruption. Melittin in combination with phospholipase A2 acts on pancreatic acinar cells to induce acute pancreatitis.^{6,7} Other potential causes of pancreatitis like alcoholic, biliary or drug induced pancreatitis or post traumatic causes were ruled out in our case.

The underlying mechanism of acute kidney injury includes acute tubular necrosis from anaphylactic or hypovolaemic shock, acute interstitial nephritis, pigment nephropathy due to severe rhabdomyolysis or hemolysis, or due to direct venomous tubular toxicity.^{8,9} Our patient had a rapidly worsening renal failure with markedly elevated serum levels of CPK suggesting rhabdomyolysis as indicated by the dark colour of the urine and oliguria. The urinary tract infection that was noticed initially and the incautious use of analgesics by the patient could have contributed to the kidney injury. Serum bilirubin and liver enzymes were raised in our patient which could be implicated to direct toxic effect and ischemic injury to the liver. No neurological or cardiac complications were evident.

The mainstay of treatment of wasp stings is essentially symptomatic with no antidotes to combat the envenomation. Removal of stings at the earliest with the use of antihistaminics, adrenaline and hydrocortisone as per the severity of the sting is important.^{6,9} Multisystem involvement along with uncommon presentations like acute pancreatitis caused by wasp sting could be reversible following strict maintenance of hemodynamic stability and supportive therapy to enhance the recovery process.^{7,9}

CONCLUSIONS

Multiple wasp stings can lead to multisystem failure, commonly acute kidney injury and rarely, acute pancreatitis and hepatic dysfunction. Our case emphasizes that early recognition of rare complications like acute pancreatitis and referral along with timely intervention and conservative management contributes to a satisfactory recovery and prevents mortality.

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