Insects that sting to defend their colonies or subdue their prey belong to the order Hymenoptera, which includes bees, wasps, hornets, yellow jackets and fire ants.1 Honeybees are beneficial to man because they produce honey, which has nutritional and medicinal benefits. They are also important pollinators essential for the propagation of plants, including many agriculturally important crops.2 Despite these benefits, being stung by a bee is an unforgettable painful experience and can lead to untimely death. Bee stings occur as accidents or occupational exposure, especially in rural areas, within close proximity to forests,3 or in bee farms. The clinical manifestations of bee sting range from local or benign to systemic life threatening multisystem involvement, which result from allergic and/or anaphylactic to toxic reactions. Bee venom contains many toxic fractions, the most important being mellitin, which alters capillary permeability, causes local pain, haemolyses red cells and lowers blood pressure.4 The venom also contains antigenic components which are capable of invoking an allergic response in the form of hypersensitivity in a significant proportion of the population, if subjected to a subsequent challenge. Multiple stings, usually in excess of 100, may result in significant haemolysis with acute anaemia and subsequent renal failure.4 A bee dies after stinging her victim, leaving the barbed end of her stinger apparatus, or ovipositor, firmly embedded in the skin.5 There are a few reports on the uncommon reactions to bee sting which include acute renal failure and haematuria.3,6 However, there is no documentation of bee sting in a sickle cell anaemia patient in medical literature to the best of our knowledge. It is against this background that we report an uncommon presentation of gross haematuria following multiple bee stings in a 8-year-old Nigerian child with sickle cell anaemia. The patient had evidence of massive intravascular haemolysis and was transfused with a unit of fresh whole blood. However, he died within 36 hours on admission despite medical intervention.

KEYWORDS: Envenomation, gross haematuria, honeybees, sickle cell anaemia

ABSTRACT

Gross haematuria is an unusual complication of Honey bee stings. Herein, we report a rare case of gross haematuria following multiple honeybees stings in an 8-year-old Nigerian child with sickle cell anaemia. The patient had evidence of massive intravascular haemolysis and was transfused with a unit of fresh whole blood. However, he died within 36 hours on admission despite medical intervention.

Bee sting envenomation resulting in gross haematuria in an eight-year-old Nigerian male with sickle cell anaemia: A case report

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CASE REPORT

An 8-year-old Nigerian male presented with a history of multiple bee stings on the head and passage of bloody urine 50 minutes prior to hospitalisation. He was initially rushed to a private clinic where he received intravenous (I.V) 5% dextrose saline fluid, I.V Ampiclox, I.V hydrocortisone and intramuscular diclofenac before referral to our facility for further care. He is a known sickle cell anaemia patient diagnosed at the age of 8 months in a tertiary health facility. He has been in stable state of health for over 1 year prior to the bee stings.

On admission, he was observed to be vomiting and passing watery non-bloody stools. Physical examination revealed extensive swelling on the head and face, he was moderately pale, febrile (temperature 37.6°C), and mildly jaundiced. His blood pressure was 90/60 mmHg. Other vital signs
were essentially normal. Significant systemic finding
was splenomegaly of 3 cm. His laboratory investigations
revealed a packed cell volume of 20%, white blood cell
count of 28,700/mm³ with normal differential count.
Peripheral blood film showed evidence of haemolysis in
the form of poikilocytosis and anisocytosis. His platelet
count was 84,000/mm³. Serum electrolyte urea and
creatinine were within normal limits, malaria parasite test
was positive (+). Dipstick urinalysis showed blood (++++)
other parameters were normal. He was transfused with 1
unit of fresh whole blood and was also commenced on IV
antibiotics, IV antihistamines, i.V antimalarial, zinc and
acetaminophen tablet. Hydrocortisone was discontinued.
Visible stingers were scraped off from this head. He
developed incoherent speech and became delirious within
24 hours, and died after 36 hours on admission.

**DISCUSSION**

The sight of passing overtly bloody urine is scary and needs
urgent evaluation to determine its cause and institute
appropriate treatment. Gross haematuria following bee
sting is a rare occurrence and the exact mechanism is not
known. It is possible that mellitin contained in the venom
might have triggered widespread alteration of capillary
permeability coupled with extensive haemolyses of red
blood cells, which eventually resulted in gross haematuria.
The patient had features in keeping with red cell haemolysis
(moderate anaemia, thrombocytopenia, poikilocytosis,
anisocytosis), which might have resulted from the
haemolytic action of mellitin or from sickle cell disease. Our
patient also had other features of anaphylactic reaction to
bee sting that include: Local pain, fever, swelling over the
head, vomiting and passage of watery stool. These effects
are caused by mellitin and other substances contained in
the venom like histamine, hyaluronidase, apamine and
phospholipase A. The incoherent speech and delirious
state of our patient 24 hours on admission might have been
due to neurotoxic effect of apamine and hyaluronidase in
bee venom. It is also possible that he had evolving stroke
as a complication of sickle cell anaemia precipitated by the
bee sting. A transcranial Doppler ultrasound would have
been beneficial but it was not done because we lacked
the equipment in our facility. Our patient did not receive
I.V adrenalin for management of anaphylactic reaction
because it causes vasoconstriction and might trigger or
worsen vasocclusive crises in children with sickle cell
anaemia. This is a therapeutic dilemma for Paediatricians.
Autopsy was not performed because parents declined
consent; therefore, the cause of sudden death of our patient
is not certain. It could have been caused by overwhelming
toxaemia due to the venom, which has been reported
to cause acute myocardial infarction in humans and
myocardial necrosis in animal studies. This highlights
the need for autopsies to be carried out routinely on every
case of sudden death of unknown aetiology.

**CONCLUSION**

Clinicians should be aware that the risk of developing
gross haematuria following bee envenomation appears to
be increased by co-existing sickle cell anaemia. Therefore,
every patient with bee sting should be closely monitored
for the possibility of this life threatening rare occurrence,
especially if they suffer from sickle cell disease.

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