

# Massive Envenomation by Bees Sting in a Child in Togo

Djatougbe Ayaovi Elie Akolly\*, Koffi Mawuse Guedenon, Enyonam Tsolenyanu, Lidi Kama Bessi, Didier Koffi Gnamey, Yao Atakouma

Chu Sylvanus Olympio, Lome, Tago

Email: \*elianeakolly@yahoo.fr

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## Abstract

Attacks by swarm of bees realize arrays of mass poisoning. We report the case of a 9 years old boy whose severity was related to the large number of bees which was about 400 and their locations spread throughout the skin surface with a preponderance to the cephalic end. Complications were hemolytic anemia, kidney failure and convulsions. The outcome was favorable with symptomatic care and hemodialysis.

## Keywords

Bee, Envenomation, Renal Failure, Child, Togo

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## 1. Introduction

African's bees are very aggressive and their attacks are very often massive [1] [2]. The intensity of the envenomation and the prognosis are directly related to the number of stings. Thus, 250 to 500 stings can cause the death of an adult man [3]. Simple stings are responsible for a local reaction with hives even sometimes with anaphylaxis and multiple stings cause a toxic syndrome with systemic symptoms [4]. We report the case of 9 years old boy who survived after a massive envenomation complicated of renal failure.

## 2. Observation

It is the case of 9 years old boy with no notable medical history, admitted an hour after an attack by a swarm of bees during mangoes gathering. The stings were focused on the cephalic end, all the four legs and the chest (**Figure 1** and **Figure 2**). The examination revealed a conscious child, very painful, agitated, with swelling of the face causing complete lid closure, erythematous pimples centered by stings at almost all the skin



**Figure 1.** Thoracic location of bee stings.



**Figure 2.** Dorsal location of bee stings.

surface (scalp, ears, face, neck, limbs and thorax). We noticed about 400 stings. He had a slight fever  $37.7^{\circ}\text{C}$ , a tachypnea at 30 cycles per minute [normal range below 30

cycles per minute] and a tachycardia at 120 beats per minute [normal range below 100 beats per minute]. The blood pressure was 120/60 mm Hg [normal range below 130/80 mm Hg]. He received a paracetamol-based analgesic of 15 mg/kg dose combined with 20 mg of nefopam every 6 hours, a vascular filling with isotonic saline serum of 20 ml/kg dose. He received 0.2 mg dose of adrenalin, a betamethasone-based corticosteroid 8 mg/day and an antihistamine. We removed the stings. A local antiseptic was made with hexamidine solution and chlorhexidine and an antibiotic with amoxicillin-acid clavulanic of 80 mg/kg dose divided into three daily doses was administered. Laboratory tests revealed an hyperuremia 1.68 g/l [0.10 - 0.40 g/l], an elevated serum creatinine concentrations at 50 mg/l [4 - 6 mg/l], a severe anemia at 6 g/dl [12 - 14.5 g/dl], an hyperleukocytosis at 12,300/mm<sup>3</sup> [4500 - 11000/mm<sup>3</sup>] of neutrophilic 7600/mm<sup>3</sup> [2000 - 6000/mm<sup>3</sup>] predominant and eosinophils 861/mm<sup>3</sup> [100 - 400/mm<sup>3</sup>], a thrombocytopenia 78000/mm<sup>3</sup> [150000 - 400000/mm<sup>3</sup>], an accelerated erythrocyte sedimentation rate at 74 mm in the first hour [normal range below 20 mm]. The blood smear revealed the presence of spherocytes and schistocytes. The liver function test was disrupted with aspartate aminotransferase 18 times to the normal and alanine aminotransferase 23 times to the normal. We noticed a slight increase of unconjugated bilirubin fraction with no impact on the total bilirubin. The Serologies of the viral hepatitis B and C were negative. The blood calcium rate was at 66 mg/l [90 - 110]. The urinary dipstick found a cross proteinuria with a proteinuria of 24-hours at 638 mg or 18.22 mg/kg/day. The rapid diagnostic test for malaria was positive; which required intravenous artesunate. The evolution had shown on the 2nd day of hospitalization the presence of oligoanuria with Coca-Cola urine. The levels of uraemia (3.06 g/l) and creatinine (107 mg/l) continued to increase; four sessions of extra-renal purification were taken to restore a normal urine output and renal tests (urea 0.13 g/l and creatinine 7 mg/l). On the 17th day of hospitalization, when he was about to be discharged, he presented general convulsions with a confusing post critical syndrome but responded well to treatment after symptomatic care. He has been discharged on 24<sup>th</sup> day and keeps a ptosis sequel left.

### 3. Comments

Bee venom is composed of enzymes and toxic biological substances such as mellitin, phospholipase A2, hyaluronidase, histamine and apamin. The mellitin, bees specific, is the main component of the venom (50%) and is responsible for inflammatory reaction, cytolysis, intravascular hemolysis and rhabdomyolysis that can complicate and lead to kidney disease. Phospholipase A2 may result in disseminated intravascular coagulation (DIC). Hyaluronidase increases capillary permeability and facilitates the spread of toxins. The apamine is neurotoxic [1]-[5]. The attacks in urban areas as in our case are rare; it is often occurred most of times in rural areas [6]. The severity of the clinical picture of our patient is due on the one hand to the location of the stings in the head end and to the extension to the entire skin surface and on the other hand to his young age. It is illustrated by the multiplicity of the clinical signs of toxicity [4] observed after the attack: febrile reaction, hemolytic anemia, thrombocytopenia, hemoglobinuria, ren-

al impairment. The Clinical manifestations of direct toxicity venom are often delayed by 24 to 48 hours. This involves a monitoring in intensive care with continuous monitoring of clinical and biological parameters from 50 stings in adults and a bite per kilogram of weight for the child even if the patient looks stable. But in some cases they occur immediately, making the distinction with anaphylactic reaction difficult [7]. The vascular expansion and the adrenaline are necessary to maintain an effective blood volume because the venom induced a vasopermeability despite the initial arterial hypertension reaction. The use of antihistamines and corticosteroids in high doses is recommended. Only an early care in intensive care by proper vascular filling, corticosteroids and adrenaline administration may prevent the occurrence of multiple organs dysfunction syndromes [8]. Between 250 and 500 bites, death can occur in adults but deaths have already been recorded from thirty simultaneous bites [3]. In the literature some rare cases of survival after massive bites have been described [9]. The risk of an acute renal failure is real from 100 stings because of the hemolysis induced by the venom. Kidney impairments during envenomations are due to direct toxicity of the venom on the tubules, on the prolonged hypovolemia or on the myoglobinuria second to tubulopathy and hemoglobinuria [1] [7] [10]. They usually heal without sequel but some cases that require hemodialysis as in our patient have been described [3] [6] [10] [11]; sometimes nephrotic syndrome can occur in the distance. Our patient had already proteinuria at 18 mg/kg/day; he will receive regular monitoring of renal function. An important liver cytolysis was found in our patient; as the serologies of hepatitis B and C viruses were negative, this cytolysis has been linked to the toxic syndrome. Neurological manifestations have been a bit reported in the literature [8]. The removal of stings must be done by a slight scratching so as to avoid pressure that would empty the venom gland. Local disinfection must be made; iodized products should be avoided. The pain requires analgesia morphine; we got a good result with paracetamol associated with nefopam. A similar case to ours has been reported in Morocco with a favorable evolution thanks to an early symptomatic care and a ptosis sequel after conjunctivitis [12]. The prognosis is correlated with plasma concentrations of venom aplasmapheresis may be useful in severe forms.

#### 4. Conclusion

The massive envenomations are very serious accidents potentially mortal. Their complications mainly hemolytic anemia, renal failure and convulsion must be known and detected early because the evolution and the prognosis can be significantly improved through an early and effective symptom care.

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