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A Cardiogenic Shock Following A Scorpion Envenomation : A Case Report

Charmake

Mohammed I University/Mohammed VI University Hospital · Oujda, Morocco

ABSTRACT

Scorpion envenomation constitues a common and serious clinical situation in several regions in Morocco that worsens the vital prognosis of the patient. One of the most serious forms is cardiogenic shock which is associated with high mortality.

We report the case of an 30-year-old male patient who was admitted to intensive unit department for a management of cardiogenic shock following a severe scorpion envenomation. Thanks to an early diagnosis, urgent management based on administration of vasoactive drugs and armed clinical surveillance, the evolution was slowly favorable.

***Corresponding author**

Charmake, Mohammed I University/Mohammed VI University Hospital · Oujda, Morocco. E-mail : rayso2015@gmail.com

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Introduction

Scorping envenomation is a common clinical situation in few regions in the world and constitutes a serious public health problem, mainly for rural populations. Its incidence reached up to 2.4% in Morocco with a overall mortality rate of 0.82 % to 5.3% in some regions [1]. Due to the toxicity of their venom, they cause significant trouble of the nervous, cardiovascular and respiratory systems of envenomed persons and one of the most serious forms of which is a cardiac dysfunction mainly pulmonary edema or cardiogenic shock [2,3].

This situation increases mostly the mortality due to scorpion envenomation. We report a case of a cardiogenic shock occuring as a result of scorpion envenomation who has progressed well under optimal treatment.

Presentation of case

We report the case of an 30-year-old patient having smoking as a cardiovascular risk factor. He was admitted to the polyvalent intensive unit care for management of a severe scorpion envenomation.

The clinical examination at admission revealed a hemodynamically unstable patient with blood pressure at 60/30 mmHg, heart rate at 120/min, coldness of extremities and pulmonary auscultation reveals crepitant rales diffuse, a severe local pain, sweating and priapism.

The electrocardiogram revealed a sinus tachycardia with repolarization abnormalities like T waves in the lateral leads. His chest X-ray shows diffuse bilateral interstitial syndrom characteristic of pulmonary edema.

Once the diagnosis of cardiogenic shock was done, the patient received immediately an oxygen therapy, analgesics by injectable paracetamol and administration of vasoactive drugs as norepinephrine and dobutamine (10 γ/kg/min) with a progressive increased of vasoactive (dobutamine 10 to 20γ/kg/min).

The biological assay showed hyperglycemia, hyperleukocytosis, thrombocytosis, moderate renal failure and increase in LDH. A transthoracic echocardiography (TTE) was performed which objectified a severe LV systolic dysfunction with ejection fraction at 35 %.

The evolution of the patient was marked by improving of the hemodynamic state justifying its transfer to intensive cardiac care for clinical and electrical monitoring and the evolution was favorable with the gradual degression of vasoactive drugs until stopping and a good tolerance to the introduction of a low dose of ACEi. The patient was allowed of leave the hospital.

Discussion

According to study on scorpions by Vachon, in Morocco there are 3 scorpion families, 7 genera and 27 species, the most dangerous of which is androctonus mauretanicus. These scorpions are widespread in the tropics and subtropics and threaten human life. Scorpion venom toxins have essentially neurotoxic and cardiotoxic effects by massive release of neurotransmitters and blocking of transmission on the one hand and direct or indirect action via catecholamines on the myocardium on the other hand [4,5].

There is also in scorpion envenomation, a mechanism of increased capillary permeability causing pulmonary edema and in the most severe case of cardiogenic shock [6]. Clinically, scorpion

envenomating manifests itself a few minutes after the bite by local pain then locoregional accompanied by paresthesias and numbness. There are also general signs such as sweating, agitation, hyperthermia as well as digestive signs like nausea, vomiting and abdominal pain. On the cardiorespiratory level, we can observe a clear symptoms or signs of pulmonary edema and severe cardiogenic shock with a high risk of respiratory distress and hemodynamic instability leading to orotracheal intubation and the institution of vasoactive drugs. A series of 5 cases had found severe pulmonary edema following a scorpion sting. The most involved mechanism would be an increase in left ventricular diastolic pressure and reduction in cardiac output [7].

Our patient had signs of left heart failure on dilated LV, elevated filling pressures and low cardiac output. The pathophysiology of cardiogenic shock following scorpion envenomation remains unclear. It would probably be secondary to 2 main mechanisms such as adrenergic myocarditis by direct toxic effect of catecholamines on the myocardium or myocardial ischemia by action of cytokines and / or neuropeptide Y on the coronary arteries [8].

The managing of this severe cardiac impairment consists of admission to intensive care for cardiotensional monitoring, institution of diuretic treatments and vasoactive drugs, research and correction of a possible hypovolaemia. Our patient had received dobutamine at an initial dose of 10 γ/kg/min but the persistence of hemodynamic instability had justified to add the noradrenaline at a dose of 0.5 γ/kg/min.

The interest of using serotherapy to reverse the effects of scorpion venom is controversial in Morocco. El Hafny et al [9] has proven the efficacy of this treatment, taking into account the dose of antiscorpionique serum and of its administration time limit to envenomed patient while the PCC study showed that serotherapy significantly increased the death risk and vital distress [1].

Biologically, in scorpion envenomation, hyperleukocytosis and hyperglycemia are observed [5]. These anomalies were presents in our patient. Optimal management of scorpion envenomation has been reported to guarantee a death rate of approximately 0.2% [4, 10].

Conclusion

Scorpion envenomation is a public health problem in Morocco, especially in rural regions. It can be manifested by local or locoregional signs associated more or less with general signs. Cardiogenic shock of poorly understood pathophysiological mechanism is the most serious complication and requires rapid treatment in intensive care, which is essentially symptomatic, in order to reduce the risk of mortality, which remains non-negligible.

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