

Asymmetric Pulmonary Edema after Scorpion Envenomation: A Case Report

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Abstract

Case Report

Scorpion envenomation is a frequent phenomenon in Morocco and constitutes a real public health problem. Neurotoxic and cardio-respiratory effects determine the severity of the clinical aspects. We report a case of a 44-year-old man who presented with acute asymmetric lung edema after a scorpion sting.

Keywords: Asymmetric pulmonary edema, Scorpion, Envenomation.

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INTRODUCTION

Scorpion sting envenomation is a real public health problem in Morocco since it is the leading cause of poisoning according to studies by the Moroccan poison center. Neurotoxic and cardio-respiratory effects dominate the symptomatology and determine the severity of the clinical manifestations of scorpion envenomation. Pulmonary edema is the most serious complication, affecting approximately 32% of patients, responsible for one quarter of deaths secondary to scorpion stings [1]. We report a case of asymmetric pulmonary edema secondary to a scorpion sting.

CASE REPORT

We report a case of a 44-year-old man living in a rural region near Marrakech, with no medical history, who was admitted to the intensive care unit presenting a respiratory distress secondary to a scorpion sting. On admission, the patient polypnea at 68 cycles/min, tachycardia at 150 beats / min with moderate intercostal indrawing. Pulmonary auscultation revealed crackles in the right lung. The spontaneous blood oxygen saturation measured by a pulse oximeter was 65%. On blood tests, the patient presented a hyperleukocytosis at 20,000 / mm³; Hemoglobin at 15 g/dl; a platelet count of 216000: mm³; and a Prothrombin rate of 64%. The electrocardiogram was normal.

A Chest ct scan was performed revealing (Fig. 1) foci of nodular bilateral sloping parenchymal condensation, , more marked on the right side, visible on the dorsal segment of the right upper lobe, middle lobe and the two lower lobes.

The patient received oxygenotherapy, intravenous furosemide and digoxin. The evolution was favorable starting from the fifth day of treatment.

DISCUSSION

Scorpion envenomation is a relatively frequent occurrence in the tropics and subtropics of all five continents [1]. Its frequency and the inherent morbidity and mortality make this accident a real public health problem in many countries of North Africa (the great Sahara), India, Mexico and the Middle East [2]. The toxins in scorpion venom are primarily neurotoxic; they act on the sodium channels of excitable cells, prolong the opening of the sodium channel and tend to cause lasting depolarization [3]. These toxins also have a cardiotoxic action, direct on the one hand and indirect through the effect of catecholamines on the myocardium on the other hand. In addition, scorpion envenomation leads to an increase in capillary permeability responsible for pulmonary edema of hemodynamic origin [4]. The clinical manifestations are limited in more than 90% of cases to simple pain localized at the site of the bite [2]. In the remainder of the cases, manifestations of systemic envenomation are observed, dominated by digestive disturbances (vomiting, abdominal pain), hyperthermia, sweating, and priapism. On the other hand, there is tachycardia or bradycardia, an alternation between hyper and hypotension and blurred vision. In less than 1% of all scorpion stings occur life-threatening cardiorespiratory disturbances. These manifestations correspond to acute heart failure manifesting as shock and/or acute pulmonary edema [5].

Asymmetric and unilateral pulmonary edema is a rare entity. It mainly affects patients with heart failure [6]. Pulmonary edema due to scorpion envenomation is well known, but its unilateral occurrence is rare [7-9]. The mechanism of acute pulmonary edema induced by scorpion venom, however, is not fully understood. Many factors can be involved in its genesis. Cardiogenic and non-cardiogenic factors are involved in the pathogenesis of pulmonary edema following a scorpion sting. Unilateral pulmonary edema secondary to left heart failure rarely occurs in the absence of previous lung injury. This may be explained by a simultaneous and localized increase in pulmonary vascular permeability induced by scorpion venom. The uneven and peripheral distribution of pulmonary edema indicates an increase in vascular permeability. KULKARNI *et al.* Reported unilateral pulmonary edema in a 28-year-old patient who presented with manifestations of acute left ventricular failure following a scorpion sting [9]. In another study, SANTANA *et al.* reported that after subcutaneous injection of scorpion venom *Tityus serrulatus*, unilateral pulmonary edema was induced in three of six rats [10]. EL-FORTIA *et al.* Reported a case of unilateral pulmonary edema induced by a scorpion sting in a 55-year-old man from Libya [11].

In conclusion, this article focuses on the occurrence of asymmetric pulmonary edema after scorpion envenomation. Pulmonary edema was clinically suspected and confirmed on chest CT scan and was treated with oxygen, digitalis and diuretics.

CONCLUSION

In Morocco, *Androctonus Mauritanicus* is the most dangerous of scorpion species. It represents the main type in Morocco and can induce local signs that could be followed by general signs. The most serious complication is cardiopulmonary disease. The pathogenesis of this cardiovascular and respiratory disease is not yet fully understood. Usually, the scorpion bite results in bilateral pulmonary edema. Rarely, however, pulmonary edema can be unilateral and asymmetric. The management of scorpion envenomation in Morocco is essentially symptomatic and includes the administration of vasoactive drugs (dobutamine) in the event of a state of shock, oxygen therapy and artificial ventilation in the event of respiratory distress and administration of anticonvulsant for seizures. The specific treatment with antiscorpionic immunotherapy is very controversial and is not recommended in Morocco. Adequate symptomatic management and intensive care monitoring allowed our patient to present a good outcome.

Conflicts of interest

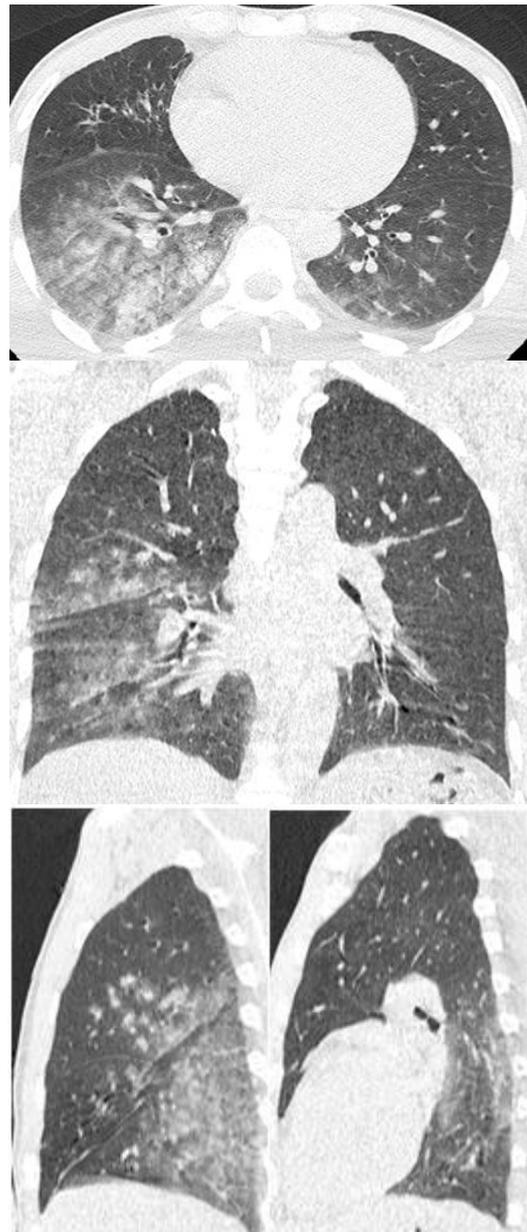
The authors declare no conflict of interest.

Contributions from authors

All authors have read and approved the final version of the manuscript.

FIGURES

Figure 1: Chest CT, parenchymal window (a) axial (b) and (c) coronal and sagittal: presence of bilateral foci of nodular parenchymal condensation more marked on the right side, visible at the dorsal segment of the upper right lobe, middle lobe and the two lower lobes.



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