Assessment of the Possible Role of Some Laboratory Parameters in Early Diagnosis of Pulmonary Edema Secondary to Scorpion Envenomation

Thesis

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تقييم الدور المحتمل لبعض المعايير المعملية فى التشخيص المبكر للإرتشاح الرئوى الناتج عن لدغات العقارب فى بعض المرضى المصريين

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Rania Hussien

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Introduction

Scorpion envenomation is a common problem in tropical and subtropical regions **(Abroug et al., 1999).** In Egypt during the year of 2005,433 patients with scorpion envenomation were admitted to the Poison Control Center of Ain Shams University Hospitals (PCC) while in the year of 2006, 347 patients were admitted **(records from PCC).**

Scorpion envenomation is manifested by local manifestations e.g parathesia and pain and systemic manifestations e.g. hypertension, tachycardia, seizures, salivation,lacrimation, involuntary urination,defecation and vomiting. Other symptoms reported include pharyngeal spasm, muscular fasiculations, abdominal cramps, oliguria, pulmonary edema and respiratory failure **(Lewin, 2002).**

Pulmonary edema is a life threatening complication of scorpion sting from various species. It results from acute left ventricular dysfunction and myocardial damage **(Boyer, 2004)**. It may also be secondary to altered permeability of alveolar capillary barrier due to intense pulmonary vasoconstriction and high capillary pressure **(Swenson et al., 2002).**

Pulmonary edema is manifested by the presence of tachypnea,cough, inspiratory retraction of intercostal spaces and the presence of lung crackles on auscultation of one or both lungs **(Springhouse, 2005).**

Pulmonary edema is diagnosed by arterial blood gas analysis, chest X-ray, pulmonary artery catheterization and an echocardiogram **(Springhouse, 2003).**

Chest radiography may fail to diagnose pulmonary edema or moderate increase in extravascular lung water, since radiological signs of pulmonary edema are usually present only when the extravascular lung water is increased by at least 35%.Therefore, in some cases complementary parameters may be necessary for diagnosis of pulmonary edema **(Sivac et al., 1983).**

Aim of the work

The aim of this study is to assess the possible role of some laboratory parameters such as plasma proteins, hemoglobin concentration, total leukocytic count and platelet count in early diagnosis of pulmonary edema secondary to scorpion envenomation among patients admitted to The Poison Control Center of Ain Shams University Hospitals (PCC), in the period from 1/1/2008 to 30/9/2008.

Patients and methods

This study will be carried out on patients of both sexes and of different ages with scorpion envenomation admitted to The Poison Control Center of Ain Shams University hospitals (PCC), during the period from 1/1/2008 to 30/9/2008.

Informed consent will be taken from either patients or their guardians.

All patients will be subjected to the following:

1. Sociodemographic study including age, sex and residence.
2. Delay time will be considered.
3. Clinical examination.
4. Chest X- ray.
5. Electrocardiography.
6. laboratory parameters:
   a) Arterial blood gases(ABGs)
   b) Serum glucose
   c) Plasma protein concentration
   d) Hemoglobin concentration
   e) Hematocrit value
   f) Total leukocytic count
   g) Platelet count
   h) Serum creatine phosphokinase (CPK-MB).

Results of this study will be statistically analyzed and expressed in tables and charts.

Discussion, conclusion and recommendations will be done accordingly

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INTRODUCTION

Scorpion envenomation is a common problem that occurs in tropical and subtropical countries and assumes great medical-sanitary importance due to its fatal effect ***(Cordeiro et al., 2006).***

Scorpion sting in its severest presentation leads to respiratory distress and mortality is related to development of myocarditis and pulmonary edema ***(Bhadani et al., 2006)***.

Pulmonary edema due to scorpion envenomation has been attributed to acute left ventricular dysfunction and myocardial damage ***(Hassen, 2003).*** It may also be secondary to altered permeability of alveolar capillary barrier due to intense pulmonary vasoconstriction and high capillary pressure ***(Swenson et al., 2002).***

The diagnosis of pulmonary edema is suggested by the presence of tachypnea, cough, inspiratory retraction of intercostal spaces and the presence of lung crepitations on auscultation of one or both lungs ***(Barreiro et al., 2007)***.

The diagnosis is confirmed by the presence of arterial hypoxemia and alveolar infiltrates over one or both lungs on chest radiography ***(Bahloul et al., 2002).***

Breathing disturbances could be also observed in patients without pulmonary edema or myocardial damage after scorpion envenomation ***(Bahloul et al., 2002).***

In addition, chest radiography may fail accurately to make the diagnosis of pulmonary edema, in particular to detect moderate increase in extravascular lung water, since radiological signs of pulmonary edema are usually present when the extravascular lung water increases by at least 35%.Therefore, in some cases, complementary parameters may be necessary for diagnosis of pulmonary edema ***(Bouaziz et al., 2006).***