CASE REPORT

Transient Unexplained Shock in 30-year-old Trauma Patient

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Abstract

Shock as an inadequate tissue perfusion is one of the frequent causes of death in trauma patients. In this context, there are various reasons for hemodynamic instability and shock including hypovolemic (hemorrhagic), obstructive (cardiac tamponade, tension pneumothorax), cardiogenic, neurogenic, and rarely septic. In the present report, a 30-year-old trauma patient with full clinical signs and symptoms of shock referred while had unknown origin; it was finally recognized as anaphylactic shock.

Key words: Anaphylaxis; shock; insect bites and stings; trauma

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Introduction:

Shock as an inadequate tissue perfusion is one of the frequent causes of death in trauma patients. There are various reasons in this context including hypovolemic (hemorrhagic), obstructive (cardiac tamponade, tension pneumothorax), cardiogenic, neurogenic, and rarely septic shock (1). There are several diagnostic tools available for classification and exploring the origin of the shock. Nowadays, rapid ultrasound in shock (RUSH) examination helps practitioners in decision making regarding the source of shock and consequently proper management (2). In addition, evidences of spinal cord injury, head injury, and pelvic and long bone fractures on imaging are other adjunctive sources. In the present report, a 30-year-old trauma patient with full clinical signs and symptoms of shock referred while had unknown origin.

Case report:

A 30-year-old male, referred to the emergency department, complaining of respiratory distress and hemodynamic instability followed falling from motorcycle. On arrival, patient history was taken from the witnesses at the accident scene who accompanied the patient. During motorcycle deriving, the patient had suddenly lost his control and hit the roadside guard. In initial evaluation, his vital signs were as follows: blood pressure: 80/40 mmHg, pulse rate: 143/minute, RR: 26/ minute and oxygen saturation of 66%. In physical examination, the patient was agitated, he had respiratory distress and lung sounds were symmetric on both sides; slight expiratory wheezing was heard in lung auscultation and lung sounds were not reduced. The pupils were isochoric and responded to light and periorbital edema was seen around both eyes. All extremities did not have any deformities and had normal motion. No remarkable issue was found in the spine and the sphincter had normal tone in digital rectal examination. Two intravenous lines (gauges 14 and 16) were inserted and two liters crystalloid fluid was infused within 20 minutes. The results of patient's initial arterial blood gas (ABG) were as follows: PH: 7.12, HCO3:17.2 meq/liter, PaCO2: 54.3 mmHg, and PaO2: 70 mmHg. Because of instability in his hemodynamic status, he was intubated through rapid sequence intubation (RSI) method. Chest, hip, and spine anteroposterior and lateral radiographs, extended focused assessment with sonography for trauma (eFAST), and computed tomography (CT) scan of the brain and cervical spine were performed. While slight edema was seen in brain CT, the other imaging had not any positive findings. About eight hours later, the patient's level of conscious increased and clinical status improved. He was gradually weaned from mechanical ventilation and extubated. Vital signs after extubation were as follows: blood pressure: 130/80 mmHg, pulse rate: 80/minute, respiratory rate: 14/minute, oxygen saturation 97% (in room air). After he was able to speak properly, described the event in details; when he was driving the motorcycle, something like an insect abruptly hit his face and he felt an intense burning in the upper of left eye. He became lethargic and could not remember what happened after. The bite site on patient's face was carefully examined and a small dot noticed. Based on above-mentioned, anaphylactic reaction was recognized.

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Discussion:

In the introduced case, we initially suspected to hemorrhagic shock caused by trauma but despite of using all diagnostic tools the reason of shock remained unknown. After taking the necessary measures and monitoring the patient, his clinical status improved gradually. When he was extubated and gave a detailed history of what happened, the mystery was solved.

Anaphylaxis is a life-threatening systemic allergic reaction that requires early diagnosis and treatment. In some studies, the prevalence rate of this shock has been reported more than 2% (3). It may be arises from variety of foods, medications, or insect bites (4, 5); it begins following adhesion of allergens to the mast cells membrane bound immunoglobulin E (IgE). This results in activation of mast cells and release of various inflammatory mediators and histamine which mediate clinical manifestations of anaphylaxis from hives and localized rash to severe anaphylactic shock with symptoms such as respiratory distress, hypotension, dermal manifestations of localized erythema, urticaria, angioedema, and nausea and vomiting (6).

Physicians are faced with some significant challenges in diagnosis of anaphylaxis. First, despite numerous definitions of anaphylaxis, there are no reliable diagnostic criteria accepted by all international societies. Second, anaphylaxis may appear with numerous atypical manifestations. Furthermore, the patients may deny any contact with any stimulus. Finally, there is no reliable and acceptable emergency diagnostic testing to rule out or diagnose anaphylaxis (7). Despite such challenges in diagnosis, we applied the Canadian pediatric surveillance program among several definitions. It defined the anaphylaxis as a "severe allergic reaction to any kind of stimulus with sudden onset lasting less than 24 hours and affecting one or more body systems. It will also produce one or more symptoms such as: hives, itching, flushing, angioedema, stridor, dyspnea, vomiting, diarrhea, and shock" (8). Rare manifestations of this disease may be appeared as bradycardia and/or myocardial infarction (9, 10). Considering these challenges, diagnosis and treatment of anaphylaxis could be delayed (11). Because any delay in diagnosis or incomplete treatment may lead to patient death, emergency physicians should be able to recognize anaphylaxis clinical manifestations and treat it accurately (12). Risk factors associated with mortality in these patients include asthma, cardiopulmonary disease, delay or failure to administer adrenaline, and patient's age. The mortality rate of anaphylactic shock caused by foods (such as peanut) is high among younger ages (adolescence and youth), while in older ages (adult and older adult), the mortality rate of anaphylaxis following insect or animal toxins is high. Anaphylactic patients are treated by crystalloid intravenous fluids, corticosteroids, blockers of histamine receptors 1 and 2, and epinephrine, followed by checking and ensuring from the airway and breathing. Glucagon can be used for treatment of refractory cases such as resistant hypotension. Bronchospasm can be treated by albuterol, ipratropium bromide, and magnesium sulfate (13). After discharging, the patient should be trained in prevention of future contacts, medications use, and use of auto injector device, if it happens again (6). An effective prophylactic method for patients with a positive history of severe allergic reaction to the hymenopterans bites is cluster protocol. This protocol is introduced as a safe and effective treatment modality for immunotherapy of these patients. In this method in defined intervals, an escalating dose of insect venom is injected to patients (14-16).

Conclusion:

For a rapid diagnosis, early treatment and increase survival of patients, anaphylactic shock should be always considered as a differential diagnosis of shock even in a trauma patient.

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