One Case of Intraoperative Toxic Shock Combined with Anaphylactic Shock

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Abstract  
Anaphylaxis is an acute, potentially lethal, multisystem syndrome resulting from the sudden release of mast-cell- and basophile-derived mediators into the circulation. Common manifestations of anaphylactic reactions include urticaria, angioedema, nausea, vomiting, hypotension and cardiovascular collapse. Cardiovascular collapse is the first detected manifestation in up to 50% of cases in perioperative anaphylaxis, because patients are anesthetized and unable to report symptoms. A patient presented with severe hypotension and orange peel-like changes after gelofusine infusion during general anesthesia. Gelofusine is a potential risk factor for a severe anaphylactic reaction. Therefore, prompt recognition and adequate therapeutic measures are necessary to avoid fatal consequences.

Key Words: Anaphylaxis, Gelofusine, General Anesthesia, Septic Shock.

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Resumen  
La anafilaxis es un síndrome multisistémico agudo, potencialmente letal, que resulta de la liberación repentina de mediadores derivados de mastocitos y basófilos en la circulación. Las manifestaciones comunes de reacciones anafilácticas incluyen urticaria, angioedema, náuseas, vómitos, hipotensión y colapso cardiovascular. El colapso cardiovascular es la primera manifestación detectada en hasta el 50% de los casos de anafilaxis perioperatoria, porque los pacientes están anestesiados y no pueden informar los síntomas. Un paciente presentó hipotensión severa y cambios similares a la piel de naranja después de la infusión de gelofusina durante la anestesia general. La gelofusina es un factor de riesgo potencial para una reacción anafiláctica grave. Por lo tanto, el reconocimiento rápido y las medidas terapéuticas adecuadas son necesarias para evitar consecuencias fatales.

Palabras clave: Anafilaxia, Gelofusina, Anestesia General, Shock Séptico.
1. Introduction

Anaphylaxis is a life-threatening hypersensitivity reaction. Perioperative anaphylaxis is rare and its incidence during general anesthesia is reported as 1: 6000 to 1: 20,000 [1-4]. Despite the rare incidence of anaphylaxis, mortality rates of 3−6% have been reported [5]. Common causative agents of anaphylaxis during general anesthesia include muscle relaxants, latex, antibiotics, and colloids [6]. Gelofusine is used widely as plasma substitutes on patients with septic shock. Gelofusine associated anaphylaxis has been reported in the literature [7,8,9,10]. Here, we report a case of successfully treated anaphylactic reaction triggered by gelofusine on a patient with septic shock, to assist establishment of guidelines for further management. Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

2. Case Report

A patient was brought to the hospital for upper abdominal pain. After admission, the patient felt abdominal pain aggravated and hemodynamically unstable began to appear. An exploratory laparotomy was decided to perform immediately after he was diagnosed with acute diffuse peritonitis, septic shock, and chronic bronchitis with lung infection. Preoperative laboratory values were significant for HB 146g/L, WBC 17.4×10^9/L, Alb 25.3g/L, PT 17.2s, PTA 72%.

The patient (height 170cm, weight 75kg) admitted indifferent, painful face, shortness of breath, auscultation of lungs breathing sound thick, lungs scattered in the wet rales. He received standard monitoring consisting of pulse oximetry, electrocardiography, and invasive blood pressure measurements. On physical examination, the patient’s heart rate is 130 beats/minute; blood pressure 76/40 mmHg; respiratory rate, 22 breaths/minute; SpO2, 82%; and temperature, 39 ℃. And his ASA Physical Status classification is ASA IV/E. Keep pumping norepinephrine at the dose of 4.8-6.4mg/h, the blood pressure was maintained at 80/40mmHg.

Anesthesia is induced with etomidate 15mg, midazolam 2mg, sufentanil 25mg, cisatracurium 10mg is administered for paralysis, and the patient is intubated. The oxygen saturation rose from 82% to 93%. Anesthesia was maintained with propofol plus remifentanil. After 15minutes, HR rose from 130 beats/minute to 140-150 beats/minutes and blood pressure decreased from 80/40 mmHg to 70/36mmHg. Intravenous injection of large amounts of norepinephrine, the situation is not improved.

At the same time, orange peel-like changes in bilateral upper arm skin of the patient is found. Considering the result of allergies, immediately stop intravenous infusion of gelofusine while intravenous methylprednisolone 80mg, pumping adrenaline (1mg/50ml, speed 20 ~30ml/h).

Patient HR gradually decreased to 100 beats/min, blood pressure slowly rose back to 102/70mmHg. Decreased the pumping of epinephrine consequently. However, the skin orange peel-like changes occured again after 5minutes. The appearance disappeared until plus epinephrine once again.

About 2 hours after the start of operation, SpO2 decreased to 88% slowly. Adjust the respiratory rate and tidal volume, no increase in oxygen saturation, additionally, respiratory and tracheal tube abnormalities have not been detected. Auscultation of the lungs by the preoperative from scattered wet rales into full of the lungs wet rales. Immediately injected furosemide 20mg, and oxygen saturation gradually increased to 92%. Auscultation lung wet rales significantly reduced after the operation. Intraoperative infusion included crystal fluid 2000ml, colloidal 1000ml, erythrocyte suspension 3U, plasma 1350ml, and urine output 1000ml totally. The patient was transferred to the ICU for treatment and discharged 14 days later.

3. Discussion

Anaphylaxis is an acute, potentially lethal, multisystem syndrome resulting from the sudden release of mast-cell- and basophile-derived mediators into the circulation. Common manifestations of anaphylactic reactions include urticaria, angioedema, nausea, vomiting, hypotension and cardiovascular collapse. Cardiovascular collapse is the first detected manifestation in up to 50% of cases in perioperative anaphylaxis, because patients are anesthetized and unable to report symptoms. The predominant cause of mortality in adult septic shock is vasomotor paralysis. The most important goal of the patient’s intraoperative management is the maintenance of a mean arterial pressure sufficient to provide adequate coronary and cerebral perfusion.

The diagnosis of toxic shock in this case has been clear. During the surgery, the blood pressure still cannot be maintained although replenish liquid and a large number of vasoactive drugs was applied. It is considered that the existence of allergic factor, in addition, gelofusine is the allergic factor. The reason is only to stop the use of gelofusine more than others. Although the lack of specific allergic performance in the patient, it was significant improved after anti-allergy treatment. Allergic symptoms reappeared when adrenaline is discontinued, however, it is consistent with the characteristic that the gelofusine cannot be metabolized in the short term.
References


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