Case report

Treatment of thoracic hemorrhage due to rupture of traumatic mediastinal hematoma

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ARTICLE INFO

Article history:
Received 10 March 2015
Received in revised form 19 June 2015
Accepted 20 June 2015
Available online 28 November 2015

Keywords:
Posterior mediastinal hematoma
Multiple trauma
Hemorrhage

ABSTRACT

Patients in traffic accidents are usually presented with pain and bleeding due to fractures or soft tissue injury. On some occasions, more severe complications may be triggered by the trauma. A review of the published English language literature reveals no survival case once the traumatic mediastinal hematoma is ruptured. In our case, a 54-year-old man suffering motorcycle accident was admitted to emergency department. Computed tomography scan revealed subdural hematoma combined with posterior mediastinal hematoma. The patient was saved and discharged with a satisfactory outcome. Here we hope to share our treatment experience in dealing with the patient with severe multiple trauma.

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Introduction

Traumatic mediastinal hematoma, especially when it is ruptured, is a common emergency in the critically ill patients. In presence of such conditions, immediate measures should be taken to the patients, such as blood salvage and reinfusion, as well as decreasing the time of surgery preparation. In this case, we presented a patient with thoracic hemorrhage due to rupture of traumatic mediastinal hematoma, and we hope to share our treatment experience in dealing with the patient with severe multiple trauma.

Case report

A 54-year-old man injured in a motorcycle accident was admitted to our emergency department. Before arrival at the emergency room, he was unconscious, and vomited twice. No dyspnea was observed. Upon arrival, his blood pressure (BP) on presentation was 168/110 mmHg, heart rate 83 beats/min, respiration 20 beats/min, peripheral oximetry 99%, the left pupil 0.5 cm, the right pupil 0.3 cm, Glasgow Coma Scale (GCS) score 8 points, red blood cells 3.91 x 10^6/ml and hemoglobin 107 g/L.

Computed tomography (CT) scan revealed subdural hematoma combined with pleural effusion and posterior mediastinal hematoma (Fig. 1). Closed drainage of pleural cavity was performed, after which approximately 600 ml of bloody liquid was sucked out. Then removal of a subdural hematoma combined with disc compression was performed to eliminate the potential threats of cerebral hernia. After that, the patient was transferred to the intensive care unit (ICU).

After arrival at the ICU, the BP was maintained at 130/70 mmHg to ensure the brain perfusion. Five minutes later, about 800 ml of bloody liquid was sucked out from the intrathoracic drain tube suddenly. The BP reduced to 40/25 mmHg, and the heart rate decreased to 35 beats/min. On this condition, the infusion speed was accelerated, and noradrenalin was administrated via intravenous push to increase the BP. As no increase was noted in the BP and heart rate, blood salvage and reinfusion was immediately performed. Ten minutes later, the BP and heart rate were 90/60 mmHg and 80 beats/min, respectively. After that, exploratory thoracotomy was conducted immediately. During the surgery, approximately 2000 ml of blood and blood clot was observed in the thoracic cavity, and posterior mediastinal hematoma with a size of 12 cm x 4 cm (ranged from the azygos vein to the diaphragmatic muscle) was identified. A crevasse was found in the middle part of the hematoma, through which the active bleeding flowed into the thoracic cavity continuously. Ligation of the ruptured esophageal artery originated from aorta was performed. After the surgery, about 150 ml of bloody fluid was drained at postoperative 1 day. CT

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Peer review under responsibility of Daping Hospital and the Research Institute of Surgery of the Third Military Medical University.

http://dx.doi.org/10.1016/j.cjtee.2015.06.002
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scan indicated that the subdural hematoma and posterior mediastinal hematoma disappeared (Fig. 2).

Six days after the surgery, the patient was conscious. He was transferred to the department of cerebral surgery for further treatment. At postoperative 22 days, he was discharged with satisfactory outcome.

Discussion

Traumatic mediastinal hematoma has been reported to be associated with various injuries including fractures of sternum, ribs and vertebrae, and particularly rupture of thoracic main vessels. Previous results indicated that traumatic rupture of aortic injury was the leading cause of mediastinal hematoma. The major causes of posterior mediastinal hematoma included rupture of descending aorta, ruptured aneurysm of the inferior thyroid artery, and vertebral fractures. In this report, we presented a very rare case of posterior mediastinal hematoma mainly due to rupture of esophageal branches of the inferior thoracic aorta but without aortic injury.

A review of the literature from 1980 to present identified 47 cases of posterior mediastinal hematoma, with 9 cases secondary to blunt trauma, 2 cases a fall from a standing height, 15 cases spontaneous hematoma and 19 cases were associated with complication of subclavian venous cannulation. However, a search of the English language literature revealed no other survival case once the traumatic mediastinal hematoma is broken.

The most common symptoms among patients who are hemodynamically stable with a mediastinal hematoma are shortness of breath and chest pain, followed by respiratory distress, hypotension, tachycardia, chest wall ecchymosis, and dysphagia secondary to compression of the esophagus by an expanding hematoma.

For the treatment, once mediastinal hematoma is diagnosed, procedures aimed to lower the BP are preferred to prevent the hematoma from augmentation and/or rupture. As the patient is combined with severe craniocerebral injury, a normal BP is extremely demanded to ensure the cerebral perfusion. However, this may lead to rupture of hematoma. Therefore, corresponding actions are prepared in advance to deal with the posterior mediastinal hematoma once a normal BP is obtained. Furthermore, the duration from the shock to the surgery is shortened instead of a “wait and see” attitude to obtain a normal BP, which is of prime importance to save the patient. Finally the patient is discharged with a satisfactory outcome.

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