Pakistan Journal of Chest Medicine, 2012 April-June; 18(2): 41-43

CASE REPORT

POTENTIALLY LETHAL INTRATHORACIC TRAUMA RESULTING FROM ANTELOPE HORN INJURY: A CASE REPORT

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ABSTRACT

We are reporting successful management of a patient who sustained anterior chest wall injury by an antelope horn and presented with respiratory distress in the casualty. He had an open wound exposing the heart and a swelling deformity over sternum. CT scan of thorax revealed presence of bilateral haemo-pneumothorax and sternal fracture. Bilateral tube thoracotomies were performed along with wound exploration and sternal fixation with primary closure of the defect. Patient required ventilatory support for next 72 hours and was subsequently discharged.

Key words: Trauma: thorax, penetrating, chest; thoracostomy

Introduction

Animal horn injuries of the thorax are rare, unpredictable and potentially life threatening [1] as they may involve the airways, lungs, heart, great vessels and the mediastinum. Quick resuscitation in the casualty followed by CT scan of thorax and evaluation of cardiac enzymes are helpful in making fast therapeutic interventions in such patients. We are reporting the successful management of a patient who sustained intrathoracic trauma caused by an Antelope horn.

Case history

A 45 year old male presented in a state of respiratory distress and pain over chest wall after being hit by a charging antelope while riding a motorbike. The patient was conscious and ambulatory but had dyspnea and tachypnoea. His blood pressure was 100/60 mm Hg, pulse rate 150 beats per min, respiratory rate 50 per minute and oxygen saturation was 76% while breathing 6 L/min of oxygen through a polymask. Arterial blood gas analysis showed hypoxemia and respiratory alkalosis with pH of 7.47. Inspection of the chest wall revealed a swelling over the lower half of sternum and a gaping wound measuring 8 $\times$ 6 cm, exposing the heart.

The wound was immediately covered with sterile occlusive dressing. The patient was intubated and connected to a ventilator. After volume resuscitation and initial stabilization,

urgent investigations were done. His CPK and Troponin T were within normal range and chest x-ray showed bilateral blunting of costophrenic angles. An urgent CT scan of thorax (Fig 01) revealed bilateral haemopneumothorax and fracture of sternum with dislocation of left 4th and 5th costochondral junctions. His haemoglobin was found to be 8.8 gm/dl and other investigations were unremarkable. There was no evidence of any other lung, cardiac or mediastinal injury.

Bilateral tube thoracostomy drains were inserted under local anesthesia and approximately 150 ml of blood was drained. The patient was transferred to the operating room where the wound was explored, debrided and wire fixation of sternum and primary closure of the wound was undertaken. The patient required ventilatory support for 72 hours. He improved significantly and was successfully weaned and extubated. He was discharged from ICU two days later and discharged from hospital after another five days. He has been doing fine in a six month follow up.

Fig 01: CT Scan Thorax

Discussion:

Cattle horn injuries are common in countries like India and have been anecdotally reported in literature[,3]. Penetrating chest wall injuries may result in sternal dehiscence, flail chest, tension pneumothorax or mediastinum or both and cardiac tamponade. Lethal injuries are those involving the airway, oesophagus, cardiac, vascular and other mediastinal structures have never been reported.

External appearance of the wound may be quite deceptive, as we found in this patient. He was refused for treatment at another hospital citing the reason that it requires cardiac surgery, a service they were unable to offer. Viewed externally, the injury looked serious, with a big defect in chest wall and the beating heart visible to the naked eye, which in fact, protected the patient against development of any cardiac tamponade despite the pericardial injury. The communication between atmosphere and the mediastinum in such patients can result in a sucking chest wound when the patients inspires[4] and cause a pendelluft phenomenon, resulting in respiratory distress and hypoxia. Such wounds are sometimes seen in blast injuries, severe avulsion injuries (as in this patient) or close range shot gun injuries and should be closed immediately. We closed the wound to prevent further entry of air and the positive pressure ventilation also provided the tamponade effect.

Initial treatment in thoracic trauma patients includes protection of the airway, respiratory support and fluid resuscitation [5], which are key to a successful outcome. There is high risk of hemopneumothorax in such injuries even though the initial chest X ray may not show any pneumothorax and can only be confirmed with CT thorax [7]. As it happened in our patient where Xray chest did not revealed any pneumothorax. Therefore It was essential to perform early thoracostomy to avoid any possibility of tension pneumothorax which can develop after commencing positive pressure ventilation. Thoracostomy also helps in drainage of blood from the pleural cavity as any residual haemothorax greatly increases the risk of empyema [6].

Anterior thoracic injury with hemodynamic instability generally indicates a severe injury like cardiac tamponade and exsanguinating hemorrhage [9]. Evaluation of the myocardium by ECG and cardiac enzymes was helpful to rule out any cardiac injury in this case and is recommended to exclude blunt cardiac injury associated with thoracic trauma. In fact, isolated sternal fractures have not been found to be associated with cardiac injury [10]. Thoracic computed tomography is another tool of immense help in thoracic trauma and is much more sensitive than a conventional X-ray [7]. It can easily distinguish chest wall

injuries from parenchymal injuries, which may not be possible with X-ray [8], and is very helpful in diagnosing silent myocardial contusions. Early CT imaging and cardiac enzymes can rule out serious myocardial injuries and make fast therapeutic interventions possible.

The appropriate use of intercostals drains and wound exploration are important considerations in patients with non-cardiac penetrating thoracic trauma. The management should focus on immediate transportation, triage, and quick interpretation of diagnostic procedure reports followed by fast surgical management. Thoracotomy, if indicated, should be performed early.

Key Message

Antelope horn injuries of thorax are rare, unpredictable and potentially life threatening. The successful management depends on immediate resuscitation, fast evaluation and therapeutic intervention.

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