A Rare Case Of Isolated Blunt Traumatic Diaphragmatic Rupture

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Introduction

Traumatic diaphragmatic rupture (TDR) is a recognized consequence of high velocity blunt trauma to the abdomen usually a result of motor vehicle accident (MVA) and occasionally by penetrating thoraco abdominal trauma. Blunt traumatic diaphragmatic rupture (BTDR) is a life threatening condition with an incidence of 0.8%–1.6% in blunt trauma [1–3]. The diagnosis often happens to be late due to the absence of typical symptoms or other major injuries dominating the clinical aspect [4]. An isolated BTDR is rare. Here we present a rare case of isolated blunt traumatic diaphragmatic rupture with its review of literature.

Case Report(s)

A 24-year-old man presented to the emergency department after sustaining injury by road traffic accident. Upon arrival he was alert, but dyspnoeic. The breath sounds over the left side of the chest were decreased. Apart from minimal bruises over the anterior part of the chest and the upper abdomen there were no obvious external injuries. Abdominal examination was normal. Initial chest X-ray showed haziness in the right hemi thorax with doubtful presence of bowel loops [Figure-1]. We confirmed the diaphragmatic rupture with contrast upper gastrointestinal study [Figure-2]. Patient was immediately taken up for emergency surgery where laparotomy and repair of the diaphragmatic rupture was done.

Discussion

Diaphragmatic rupture is most commonly reported after trauma, either penetrating or blunt where the incidence is reported up to 6% [5]. Blunt trauma caused by motor vehicle accidents and penetrating trauma from gunshot and stab wounds are the major etiologic factors in most patients. The difficulty of the diagnosis and high morbidity and mortality rates are associated with untreated cases make this clinical entity more important. When diaphragmatic injuries cannot be recognized in the acute phase of the trauma, the affected structures may be strangulated into the thorax and therefore the mortality rate may increase from 20 up to 80%.

During severe abdominal trauma, a tenfold increase in pressure can occur in the abdomen, transmitting a sudden blow of kinetic energy through the domes of the hemi diaphragm. Isolated blunt traumatic diaphragmatic rupture is rare and thus might be followed by a period of weeks or months not revealing any symptoms [2, 5]. Most BTDR are located on the left side in the musculo tendinous intersection [1, 3, 4]. Right BTDR are rarely described and less frequent [6]. Herniation of colon, small bowel, or liver may occur and result in ileus, necrosis, and perforation [4, 7]. Regardless of the mechanism of the injury, the early recognition of an occult TDR usually depends on a high index of suspicion. A combination of any of the following factors should arise suspicion of TDR and prompt further diagnostic investigation: Pericostal injury, fracture of pelvis or lumbar spine reflecting a major compression of the torso, dyspnea, pain in the lower chest or upper abdomen, dullness or tympanic over the lower chest, mediastinal shift and bowel sounds in the chest should arise suspicion.

When the clinical and chest X-ray findings suggest a diaphragmatic injury, appropriate contrast GI studies may be helpful conclusive diagnostic tools for the precise diagnosis. We performed an upper GI study to reach a definitive diagnosis. Although ultrasound is a noninvasive modality, a conclusive diagnosis may be difficult particularly in the patients without herniation [8]. CT is a reliable diagnostic tool in cases with suspected diaphragmatic injury long after the traumatic event [9, 10].

Conclusion

TDR is a rare injury, however it must be suspected in all trauma patients. The prompt identification of TDR depends on a high index of suspicion and careful attention to physical and chest X-ray findings initially. If high index of suspicion suspicion is attained, the diagnosis is not very difficult. Chest / abdominal X-ray and in particular cases, CT and USG improve the
accuracy of diagnosis. With early diagnosis and prompt therapy, morbidity and mortality rates will be lower in patients with TDR.

References

Illustrations

Illustration 1

Chest X-ray PA view

Illustration 2

Contrast study showing bowel within the thorax
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