

## Traumatic right diaphragmatic rupture with hemothorax: a diagnostic challenge!

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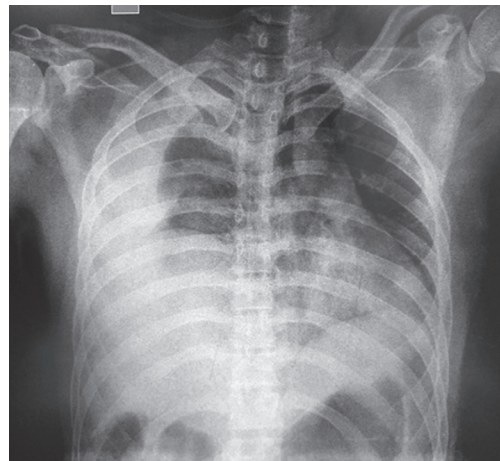
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Traumatic injuries of the diaphragm remain an entity of difficult diagnosis especially when it comes to the right diaphragm. It is a recognized consequence of high velocity blunt trauma to the abdomen, usually as a result of road traffic collisions or lateral intrusions into the vehicle and occasionally, penetrating thoraco-abdominal trauma. It has been reported that the rate of initial missed diagnosis of traumatic diaphragmatic injury ranges from 12% to 63% on CT (1). A missed diagnosis is associated with a mortality of 30% to 60% due to late presentation of intrathoracic visceral herniation and strangulation (2,3). After a high speed motor vehicle accident, a 30-year-old Saudi male was received in the trauma room. He was confused, hypotensive and in respiratory distress. The initial diagnostic work-up included chest X-ray and full body non-contrast spiral CT scan, revealing fracture of the nasal bone and right hemothorax. No other radiological findings were detected in the initial assessment. Due to an assumed massive right-sided hemothorax (*Figure 1*), a thoracic tube was inserted and 750 mL of blood coming in the chest drain. After initial stabilization the patient was then transferred to the surgical unit of Sabya General Hospital, Saudi Arabia.

On admission, the patient was hemodynamically stable. His conscious level improved, maintaining saturation at room air. The routine review of the provided copies of the spiral CT scan showed a displacement of the liver into the right hemithorax (*Figures 2,3*), indicating liver herniation on the right side producing high-density appearance which



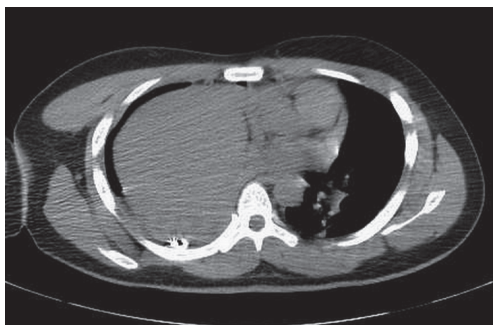
**Figure 1** Chest radiograph shows an elevated right hemidiaphragm with high density in the right thorax indicating presence of massive pleural effusion.

is similar to the hemothorax due to right diaphragmatic rupture. Surgery was planned via thoracic approach for which the patient was shifted to nearby tertiary centre where repair of the right diaphragm was done by a thoracic surgeon. The patient remained in a good condition without developing any thoracic or abdominal complications.

CT is currently the method of choice in the emergency department with high diagnostic accuracy in imaging traumatic condition (4). Furthermore, reviewing more images including different views such as multi-planar



**Figure 2** Coronal reformatted CT image demonstrates displacement of the liver into the right thorax indicating the herniated liver due to right diaphragmatic rupture.



**Figure 3** 2D axial CT image shows displacement of the liver into the right thorax without clear appearance of the right diaphragm.

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reformation increases the diagnostic value of CT, thus, leading to reduction of frequency of missed diagnosis.

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### Footnote

*Conflicts of Interest:* The authors have no conflict of interest to declare.

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