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## History

A 32 years old male presented to ER with recent road traffic accident and above are chest X-rays and CT coronal studies acquired in ER and on 5<sup>th</sup> day of admission.



## Questions

Q1. What are the findings on these images?

Q2. Diagnosis?

## QUIZ

### Answers

**X-rays:** Initial X-ray from 3<sup>rd</sup> of April is taken immediately after trauma in ER and is a supine film. Shows asymmetric density of the hemi thoraces with increased density of the left side. This raises the possibility of left haemothorax with normal appearing left dome of diaphragm. The right hemi thorax is within normal limits.

The follow up X-ray from the 8<sup>th</sup> of April shows an elevated left dome of diaphragm. The differential diagnosis of this appearance is diaphragmatic palsy versus diaphragmatic rupture.

**CT images:** Initial coronal CT from 3<sup>rd</sup> of April shows a haematoma along the left lobe of liver without a liver laceration. There is fluid in the sub-hepatic area. There is rupture of the left dome of diaphragm however the stomach has not herniated through the resultant defect.

The follow up coronal CT from the 8<sup>th</sup> of April shows the stomach herniating through the defect into the left hemithorax. The fluid in the sub-hepatic space has resolved. The haematoma along the left lobe of the liver is clearly along the left diaphragmatic crus.

**Answer 2:** Traumatic rupture of the left dome of diaphragm.

cause more deaths and thus a lower rate of patient survival until diagnosis in the hospital. An isolated diaphragmatic rupture is less common and more commonly occurs in association with pelvic fractures, splenic rupture, hepatic laceration and laceration in thoracic aorta. Diagnosis is made in majority of cases early but may be undiagnosed for months or years. Plain X-rays and CT scan are the most modalities used for diagnosis. On plain X-ray there would be loss of contour of hemidiaphragm, herniation of abdominal viscera into thorax with or without mediastinal shift. On CT examination the characteristic finding is loss of continuity of hemidiaphragm with herniation of viscera with classical collar or hour glass appearance.<sup>3</sup>

### Discussion

Diaphragmatic rupture is relatively less common with a reported incidence of 0.8-8% in patients with blunt or penetrating abdominal trauma.<sup>1</sup> It is more common in male gender and mainly on left side (80-90%) followed by on right side (20-30%) or less commonly bilateral (5-10%). The reason for left side predominance could be a weaker left diaphragm or well protected right diaphragm by the liver.<sup>2</sup> Although larger autopsy studies have shown a similar frequencies and more severe injuries associated with right-sided ruptures

### References

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3. Oikonomou A, Prassopoulos P. CT imaging of blunt chest trauma. *Insights Imaging.* 2011; **2(3)**: 281-95.