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Cough-induced rupture of the right diaphragm and abdominal herniation

Accepted: 6 March 2012
Published online: 17 April 2012
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Dear Editor,

We report a case of a cough-induced traumatic rupture of the right diaphragm with abdominal herniation.

A 49-year-old male patient arrived at the emergency department for severe respiratory distress and carbonarcosis. He had a medical history of chronic respiratory disease (Gold III COPD) and hypertension. This obese smoker was admitted to the intensive care unit for noninvasive

ventilation. Clinical examination on ICU admission showed right upper abdominal pain and subcutaneous thoracic emphysema; the patient also presented an uncomplicated umbilical hernia.

Two days later the patient still presented dyspnea and abdominal pain with severe and persistent coughing. The ileus resolved once the morphine treatment had been stopped. A chest X-ray and an abdominal CT scan showed no abnormalities at this time. Two days later a chest X-ray control (Fig. 1) showed the intrathoracic presence of abdominal structures suggesting a right diaphragmatic rupture in the thoracic cavity.

The thoracic CT scan (Fig. 1) confirmed the presence of a right diaphragmatic rupture with intrathoracic abdominal fat and intestinal structures, which required surgical reparation.

The abdominal exploration showed a large herniation of gastrocolic omentum with the colic portion associated with an old rib fracture. The right diaphragmatic hernia was then surgically repaired and covered with a synthetic prosthesis; pleural drainage was performed at the end of

the operation. The postoperative chest X-ray and CT scan showed no diaphragmatic hernia yet, and the patient was uneventfully discharged to the ward.

The most common cause of diaphragmatic rupture is reported to be trauma, though different percentages have been cited in studies. Seven percent of thoracic injuries and 22 % of thoracoabdominal injuries are associated with diaphragmatic injury, and left-sided ruptures are five times more common than right-sided injuries.

Various complications have been related to coughing including pneumothorax, pneumomediastinum and rib fracture [1].

Although autopsy studies have revealed an equal incidence of right and left diaphragmatic ruptures, clinical study reports suggest 88–95 % of diaphragmatic ruptures occurred on the left side. Right-sided ruptures are associated with high mortality and morbidity, and thus the underdiagnosis of right-sided injuries may be due to greater pre-hospital mortality after trauma injury. Right-sided tears are significantly less likely than left-sided tears because of the protected effect of the liver. This could also be explained by a better visualization of the left diaphragm, on diagnostic laparoscopy, with restricted visualization of the right diaphragm [2].

This observation is the first documented case of a patient developing a right diaphragmatic rupture after persistent cough during his hospital stay that required surgical repair leading to an uneventful recovery.

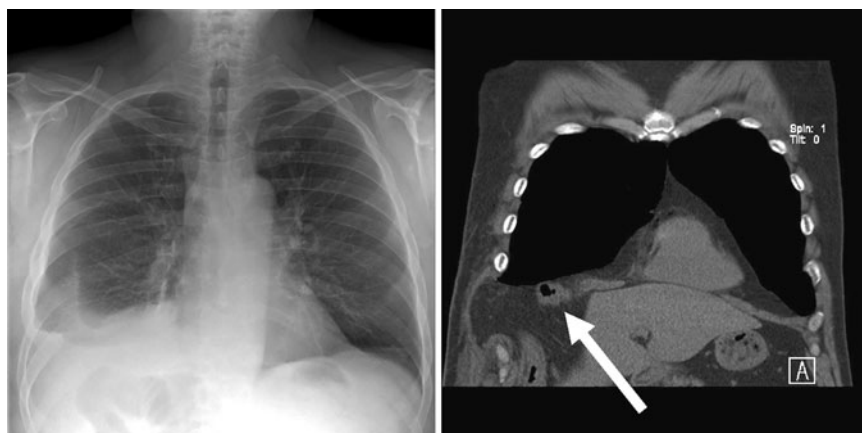


Fig. 1 Chest X-ray and CT scan showing diaphragmatic rupture and abdominal structures in the thoracic cavity (see arrow)

References

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