Thoracoabdominal herniation – but not as you know it

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ABSTRACT

Thoracoabdominal hernias are uncommon following blunt trauma. If diaphragmatic rupture does occur, the abdominal viscera can herniate into the thorax through the diaphragm. We report a rare case of thoracoabdominal herniation in which the bowel herniated through the lateral abdominal wall, migrating cranially and entering the thorax through an intercostal defect. This case highlights the need for early and definitive surgical repair.

KEYWORDS

Hernia – Thoracoabdominal – Trauma – Diaphragm

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Case History

A 72-year-old woman with a background of hypertension, hypothyroidism and asthma was involved in a road traffic accident. She was managed in accordance with *Advanced Trauma Life Support*[®] protocol.¹ Initial examination and imaging demonstrated the presence of multiple right-sided injuries including C5 and C6 transverse process fractures, flail chest and a haemopneumothorax secondary to multiple right-sided rib fractures. She was also found to have a traumatic hernia of the hepatic flexure of the colon through the anterolateral abdominal wall.

The patient's initial injuries were managed conservatively with a chest drain and a Miami J[®] collar (Össur, Reykjavik, Iceland) for cervical immobilisation. She was discharged three weeks later after supporting her early respiratory failure and after the resolution of a post-traumatic ileus. When seen in the outpatient follow-up clinic, she reported frequent abdominal pain, change in bowel habit and shortness of breath. Examination revealed enlargement of the abdominal wall hernia. It was wide mouthed, extending down to the iliac crest and up to the costal margin laterally. This prompted further investigation with computed tomography (CT) colonography (Figs 1 and 2).

The imaging revealed progression of the hernia, with the hepatic flexure of the colon passing through the transversus abdominis muscle and the internal oblique muscle, travelling cranially in the space between the internal and external oblique (Fig 1), and turning medially to enter the thoracic cavity through a defect in the thoracic wall (Fig 2). In this way, the thoracoabdominal hernia bypassed the diaphragm.

Following confirmation that the patient's cervical fractures had healed adequately for her to undergo general anaesthesia, an elective hernia repair was performed. A bioprosthetic mesh was employed for the large abdominal defect, using an extraperitoneal technique. The chest defect was repaired with size 0 Ethibond[®] sutures (Ethicon, Somerville, NJ, US) to close the space between the ribs. Her postoperative recovery was complicated by cellulitis. This was settled with antibiotics and she was discharged home subsequently with no further complications elicited at the outpatient follow-up visit.

Discussion

In this case, the initial trauma had caused herniation of the hepatic flexure through the musculature of the abdominal wall. What is unusual is the subsequent migration of the bowel, passing cranially and entering the thorax through a post-traumatic intercostal defect. To our knowledge, no other case of thoracoabdominal herniation has been described in which the diaphragm has been bypassed by defects in both the abdominal and thoracic walls.

Regardless of the route, the symptoms related to the presence of abdominal viscera in the thorax are well reported in the literature. An additional space occupying mass in the thorax can precipitate cardiac or respiratory difficulties through mediastinal shift.² Gastrointestinal symptoms are common but varied depending on whether the bowel is occluded, obstructed, strangulated or perforated. Strangulation of bowel following diaphragmatic herniation occurs as much as 80% of the time and is responsible for the majority

Figure 1 Coronal computed tomography colonography: The presence of oral contrast demonstrates herniation of the colon through a defect in the anterolateral wall of the abdomen ascending superiorly around the diaphragm to enter the thorax.

Figure 2 Axial computed tomography colonography: Oral contrast in the bowel can be seen herniating into the thorax, looping around in a 180° turn before exiting to return to the abdomen.

of deaths.³ Indeed, our patient had noticed a change in the frequency of her stools.

Diaphragmatic rupture following blunt thoracic trauma in itself is uncommon, occurring in up to 1.6% of patients admitted to hospital.⁴ This may not reflect the true incidence of these injuries owing to inherent difficulties in establishing a diagnosis, particularly in an acute setting. A delay in diagnosis of diaphragm herniation is more common than not, partly because of difficulties in imaging patients with this condition.⁵ Chest radiography has a sensitivity of 46% and 17% for left and right-sided injuries respectively.⁶ This compares with 78% and 50% respectively for CT.²

Conclusions

Clinicians should have a high index of suspicion of the potential for thoracoabdominal herniation in patients presenting

with both respiratory and gastrointestinal symptoms following trauma. Imaging can prove useful in guiding further management but the treating physician should know its limitations as well as being aware of the need for early and definitive surgical repair.

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