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CASE REPORT

RIGHT SIDED DIAPHRAGMATIC HERNIA IN AN ADULT WITHOUT HISTORY OF TRAUMA: UNUSUAL CT FINDINGS

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Diaphragmatic hernia in the absence of trauma is very rare in adults. The literature describes less than a dozen such cases of right-sided diaphragmatic hernia. Here we present an unusual case of this kind in an adult patient. The hernial contents were the stomach, spleen, pancreas and large bowel, all structures that, to date, have only been documented in left-sided diaphragmatic hernias. To our knowledge, this is the first published report of a case of this nature.
Key words: Right-sided diaphragmatic hernia, adult

INTRODUCTION

Right-sided diaphragmatic hernias in adults are usually caused by penetrating or blunt trauma (1,2,3), and only a few reported cases have not involved some type of obvious damage or injury (4,5). This type of hernia in an adult typically presents in strangulated form, requiring rapid diagnosis and surgical intervention (4). In this report, we describe the case of an adult patient who had a right-sided diaphragmatic hernia but no history of trauma. Computed tomography (CT) revealed hernial contents that are not documented in any other case of right-sided diaphragmatic hernia in the literature.

CASE

A 65-year-old woman was admitted for evaluation of dyspnea and fatigue, problems she had been experiencing for a year. She had no history of trauma, previous surgery or extreme physical exertion. Her physical examination on admission revealed mild tenderness in the upper abdomen and absence of breath sounds in the right hemithorax. The laboratory findings were unremarkable. A CT scan showed bowel loops in the right chest (Figure 1), and thorax CT scan demonstrated the stomach, spleen, pancreas, a large bowel segment and mesenteric fat within the right thorax. There was a diaphragmatic defect on the midline that was continuous with the esophageal hiatus (Figures 2,3). Surgical intervention was deemed unnecessary.

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DISCUSSION

Herniation of abdominal viscera into the thoracic cavity is known to develop after blunt trauma from incidents such as motor vehicle accidents (1,2), from penetrating trauma to the lower chest, or due to a congenital defect in the diaphragm (3). Congenital diaphragmatic hernia occurs in approximately one in 4,000 live births (5,6). Small Bochdalek's hernias, which are asymptomatic posterolateral congenital diaphragmatic defects, may remain undiagnosed until adulthood (4,6). The most common type of diaphragmatic defect seen on CT studies is a small Bochdalek's hernia with fat extending from the retroperitoneum into the chest cavity (3). Since radiologists tend not to be familiar with this unusual entity, it is difficult to establish the diagnosis using conventional imaging methods. Advances in imaging techniques, particularly new spiral CT technology, have led to more frequent incidental diagnosis of small asymptomatic diaphragmatic hernias (6,7).

Several imaging methods are used to diagnose diaphragmatic hernias, including plain radiography of the chest or after nasogastric tube placement; fluoroscopy; upper and lower gastrointestinal contrast studies; sonography; CT; magnetic resonance imaging (MRI); air, dye, water-soluble contrast or radionuclide peritoneography; and liver-spleen scintigraphy (1,2,5,8). However, early diagnosis remains an issue. Both prompt identification of the condition and rapid surgical intervention are necessary if the defect is large enough to lead to respiratory or gastrointestinal symptoms. On CT, the most common findings are abrupt discontinuity of the diaphragm, herniation of abdominal

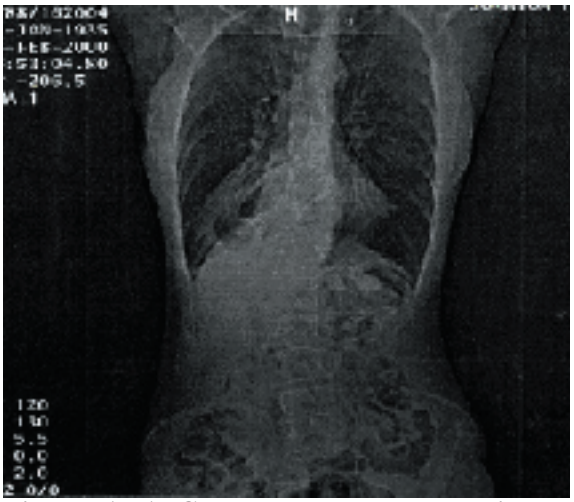

Figure 1. A CT topogram reveals dilated bowel loops in the right hemithorax with blunting of the diaphragm contour.

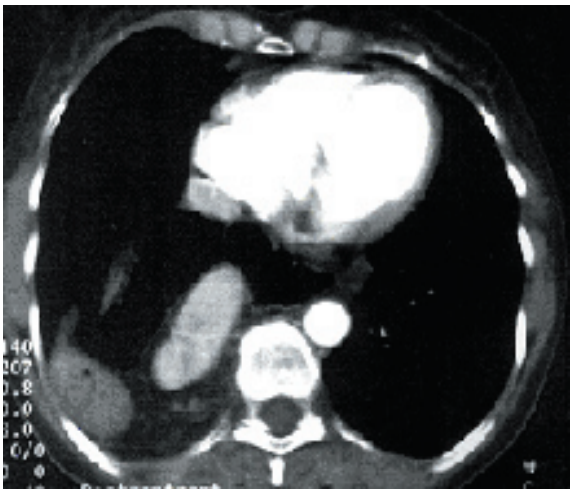

Figure 2- An axial CT image shows the spleen in the right side of the chest and a large diaphragmatic defect at the midline.

contents into the thorax, and waistlike bowel constriction, known as the "collar sign" (1). MRI may demonstrate diaphragmatic disruption even more accurately than CT due to its multiplanar imaging capability (8,9).

As emphasized earlier, it is very rare to find a diaphragmatic hernia in an adult who has suffered no trauma. To date, only about 100 such cases of left-sided- and 10 such cases of right-sided diaphragmatic hernia have been reported (9,10). As in infants, most diaphragmatic hernias in adults (85%) occur on the left (4). Right-sided defects are less common because closure of the right pleuroperitoneal hiatus occurs earlier, at the time when the bowel returns to the peritoneum from its rotation in the yolk sac (6). The liver also tends to prevent herniation through any diaphragmatic defect that might be present on the right side (4,8).

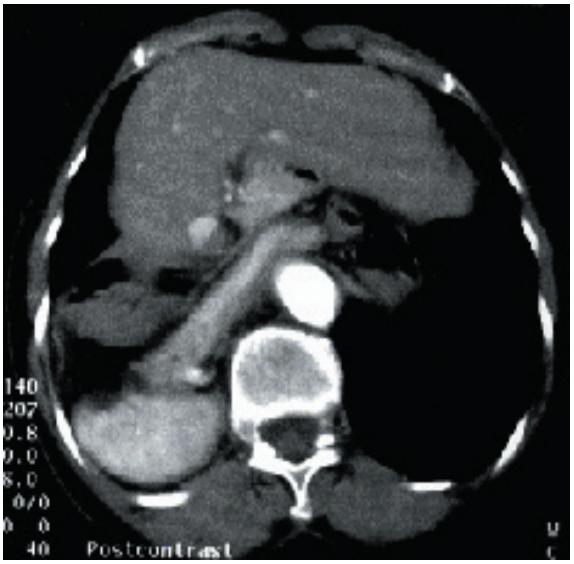

Figure 3- An axial CT image shows the pancreas, loops of bowel and mesenteric fat herniated into the right hemithorax.

Various studies have noted left-sided diaphragmatic hernias containing colon, stomach, omentum, spleen, small bowel, pancreas and adrenal gland, whereas the documented contents of right-sided hernias have been limited to liver, gallbladder, kidney and omentum (5). In our case, CT revealed a midline diaphragmatic defect and showed stomach, spleen, pancreas, colon and mesenteric fat all in the right hemithorax. To our knowledge, this is the first report of these contents in a case of right-sided diaphragmatic hernia. Almost invariably, such hernias in adults present with strangulation (4), but our patient did not exhibit this problem.

Although our patient had no history of trauma, extreme physical exertion or surgical intervention, it is possible that her diaphragmatic hernia became symptomatic secondary to past trauma and after a long delay (10). If herniation is not diagnosed in the acute phase, the patient may enter an asymptomatic latent phase or develop chronic or intermittent gastrointestinal or respiratory symptoms (3). Progressive herniation with subsequent bowel obstruction and infarction causes long-term complications (10). A confining sac may also allow patients to survive infancy, with a later rupture possibly triggering symptoms (4,5). It is also believed that the spleen may sometimes plug the defect and delay the onset of symptoms (5).

Increases in intraabdominal pressure, such as occurs in pregnancy, may also lead to late manifestation in some cases (3,4,5). The finding of abdominal contents in the thoracic cavity is unexpected in cases such as ours, where the patient reports no trauma. We suggest that all patients with symptoms compatible with this type of hernia be evaluated with CT and also with MRI if possible to better define the diaphragmatic defect and identify the hernial contents.

REFERENCES

1- Killeen KL, Mirvis SE, Shanmuganathan K. Helical CT of Diaphragmatic Rupture Caused by Blunt Trauma. AJR 1999; 173: 1611-6

2- Kearney PA, Rouhana SW, Burnay RE. Blunt Rupture of the Diaphragmatic: Mechanism, Diagnosis, and Treatment. Annals of Emergency Medicine 1989;18: 1326-30

3- Demos TC, Solomon C, Posniak HV, Flisak MJ. Computed Tomography inTraumatic Defects of the Diaphragm. Clinical Imaging 1989;13:62-7

4- Mar Fan MJ, Coulson ML, Siu SK. Adult Incarcerated Right-sided Bochdalek Hernia. Aust NZJ Surg 1999;69:239-41

5- Kapur B, Thomas S. Adult Bochdalek Hernia - Clinical Features, Management and Results of Treatment. Japanese Journal of Surgery 1991;21:114-9

6- Gale ME. Bochdalek Hernia: Prevalence and CT Characteristics. Radiology 1985;156:449-52

7- Shin SM, Mulligan SA, Baxley WA, HO KJ. Bochdalek Hernia of Diaphragm in the Adult: Diagnosis by Computed Tomography. Chest 1987;92:1098-1101

8- Diaphragmatic Rupture Due to Blunt Trauma: Sensitivity of Plain Chest Radiographs. AJR 1991;156:51-7

9- Shanmuganathan K, Mirvis SE, White CS, Pomerantz SM. MR Imaging Evaluation of Hemidiaphragms in Acute Blunt Trauma: Experience with 16 patients. AJR 1996;167:397-402

10- Murray JG, Caoili E, Gruden JF, Evans SJJ, Halvorsen RA, Mackersie RC. Acute Rupture of the Diaphragm due to Blunt Trauma: Diagnostic Sensitivity and Specificity of CT. AJR 1996;166:1035-9