The Thoracic Herniation of Liver and the Right Kidney via Partial Diaphragmatic Agenesis with Anteriorly Displaced Crus

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Abstract

Partial or complete agenesis of hemidiaphragm is a rare anomaly and typically occurs in the neonatal period. Late presentation is very rare and elderly patients are asymptomatic for a long time. Partial agenesis of the hemidiaphragm is extremely rare and it was reported in only a few cases. They are usually associated with herniation of abdominal organs and are predominantly left sided. We report a case of a 70 year-old woman whose right-sided diaphragm agenesis with anteriorly displaced crus and intrathoracic herniation of kidney, liver and colon was demonstrated by multidetector computed tomography.

Key Words: Diaphragmatic agenesis, displaced crus, hernia, tomography.

Introduction

Congenital disorders of diaphragm are results of fusion defects of the diaphragm or are connected to intestinal developmental disorder concomitant with complications in diaphragmatic closing. It is observed in approximately one in 2000-12,500 early neonatal period/child birth. The most common of those are Morgagni (anterior) and Bochdalek (posterolateral) hernias. Partial agenesis of the diaphragm is extremely rare with only 8 reported cases of hemidiaphragmatic agenesis (1). We report the case of a 70 year-old woman whose right-sided diaphragm agenesis with anteriorly displaced crus and intrathoracic herniation of kidney with herniation of liver and colon was demonstrated by multislice tomography (MDCT).

Case report

A 70 year-old woman was admitted to our clinic with chest pain. Thorax computed tomography (CT) was obtained for the reason that opacity was observed in the lower zone of the right lung on chest radiography. In the axial-oblique (Fig. 1A) and coronal thorax CT (Fig. 1B), right-sided diaphragmatic crus was determined to be anteriorly displaced.

Figure 1A. Axial-oblique CT scan shows right-sided diaphragmatic crus displaced anteriorly (arrows) and diaphragm is not be viewed posterolaterally. Right retrocrural space is seen as broad.

Figure 1B. Coronal CT scan shows right-sided diaphragmatic crus displaced anteriorly (arrows). Posteroinferior part of the right hepatic lobe is seen herniating in thorax along with hepatic flexure.
Right retrocrural space was enlarged and the right hepatic lobe, right kidney, omental fatty tissue, and bowel segments were herniated to thorax. It was interesting that the both caudal and cranial parts of the right hepatic lobe passed through displaced crus, and the posteroinferior segment of the right hepatic lobe was superiorly localized (Fig. 1B). In the sagittal images, the relationship of the liver and the kidney was like a mushroom (Fig. 2). The patient refused an operation offered by the thoracic surgery section and was discharged from the hospital with some recommendations.

Discussion

Partial agenesis of the hemidiaphragm is extremely rare diagnosis and of the cases, 88.2% is on the left side. It is often associated with pulmonary hypoplasia and these patients die because of the progressive respiratory failure in neonatal period (1). Some authors reported several cases with hemidiaphragm agenesis present with colon obstruction or incarcerated stomach (2, 3). In our case, partial diaphragm agenesis, dislocation of the right crus to anterior, and herniation of the abdominal organs from this region were demonstrated by MDCT. On MDCT, it was also shown about 180 degrees rotation of the herniated organs in transverse plane, therefore the right kidney was in close vicinity to the posteromedial and paracardiac space.

Hernias of diaphragm may be congenital or acquired. Morgagni hernia occurs/forms due to the defect in the larrey area (the part between the tendons originated from the sterno-xiphoid protrusion and the tendons originated from the costal border and attached to the central tendon). Bochdalek hernia is the formation of a posterolateral defect in the diaphragm due to the incomplete closure of the pleuropertitoneal tract (4). It is more common on the left. Diaphragm crus and the lumbosacral arches are in normal localization in diaphragm hernias. Our case did not look like congenital diaphragm hernia because of diaphragmatic crus being displaced anteriorly. To the best of our knowledge, this type of herniation and diaphragm anomaly characterized with the location of the postero-inferior segment of the liver anteriorly is the second case in literature (5). The position of the anteriorly dislocated diaphragm crus should be cautionary in terms of diaphragm agenesis. Early diagnosis is crucial, because herniation of abdominal organs and colon may be caused strangulation of it’s and rupture of colon. The MDCT is a helpful tool in the evaluation of diaphragm anomalies and related abdominal organ positions, whether or not clinical symptoms.

References


