Case Report

Diaphragmatic Hernia Presenting as Right Paracardiac Mass Lesion

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Abstract

Diaphragmatic hernias are commonly congenital and usually present in childhood. In adults presentation may differ from being asymptomatic to presenting with life-threatening complications, like obstruction or strangulation. Hernias with omentum as content may be misdiagnosed as mass lesions. Chest radiograph helps in establishing the diagnosis only in one-third of cases as radiographic picture varies depending on the content of hernia. Although with the use of helical computed tomography (CT) the sensitivity of detection of diaphragmatic defects has increased considerably but magnetic resonance imaging due to its multiplanar imaging capability and superior soft tissue contrast is the most reliable diagnostic modality in cases with uncertain CT diagnosis. We report a case of an anterior diaphragmatic hernia presenting as a large homogeneous opacity in an adult female.

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Key words: Diaphragm, Hernia, Magnetic resonance imaging.

Introduction

Diaphragmatic hernias are commonly congenital and usually occur in neonatal group.[1] Hernia of Morgagni is the most rare of the four types of congenital diaphragmatic hernias forming 2%–3% of all cases.[2] It usually presents in childhood with respiratory symptomatology.[3] In adults it commonly presents with non-specific symptoms but in some cases it may present with bowel obstruction and strangulation.[2] The radiographic appearance is that of a small soft tissue density in the right cardiophrenic angle.[4] We report a case of an anterior diaphragmatic hernia presenting as a large homogeneous opacity with well-defined margins in an adult female. This case highlights the importance of diagnosis of the entity for early recognition of the possible complications.

Case Report

A 55-year-old female presented to our hospital with chief complaint of progressive exertional dyspnoea for three months. She was a known case of seropositive rheumatoid arthritis and was on treatment with oral steroids for the last 10 years. She was also taking inhaled bronchodilators and steroids irregularly since one year for obstructive airway disease. There was no history of chest pain or trauma. The patient was overweight with body mass index of 28. She was conscious and afebrile with a pulse rate of 84/min, arterial oxygen saturation (SPO_2) of 95% at room air, respiratory rate 18/min and blood pressure of 130/80 mmHg. All other routine investigations were unremarkable. Chest radiograph (postero-anterior and lateral views) showing a round homogeneous opacity in the right paracardiac region (Figure 1 A,B). A provisional diagnosis of right paracardiac mass lesion or pleuropericardial cyst was made. Contrast enhanced computed tomography of the chest showed prominent fat in the right paracardiac region. However, there was no significant extension to superior mediastinum, sagittal reconstruction showed a possible diaphragmatic defect (Figure 2 A,B).

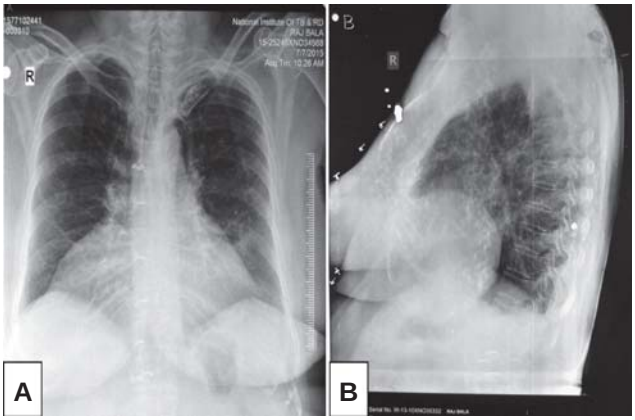

Figure 1. Chest radiograph (A) (postero-anterior view) showing mass like opacity in the right paracardiac region and (B) (right lateral view) showing anteriorly placed rounded opacity.

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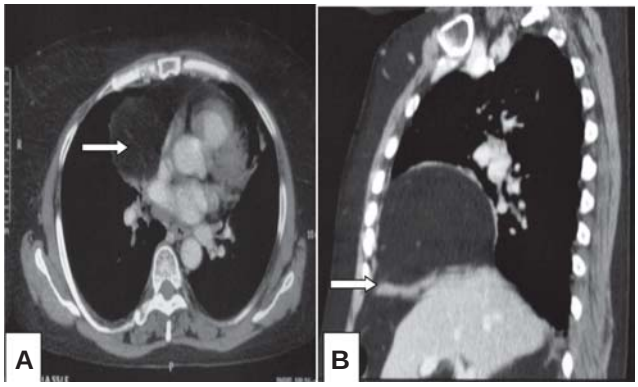

Figure 2. Contrast enhanced computed tomography of the chest (A) (axial section) showing prominent fat in the right paracardiac region (arrow) and (B) (sagittal reconstruction) showing a possible diaphragmatic defect (arrow).

Magnetic resonance imaging (MRI) of the chest (on a 3.0 Tesla system in axial, coronal and sagittal planes, T1, T2 and fat saturation [FATSAT] sequences) showed a clear defect in the diaphragm. The soft tissue component showed hyperintense signal on T1 weighted images with suppression on FATSAT image. There were few linear flow voids suggestive of vessels (Figure 3 A,B).

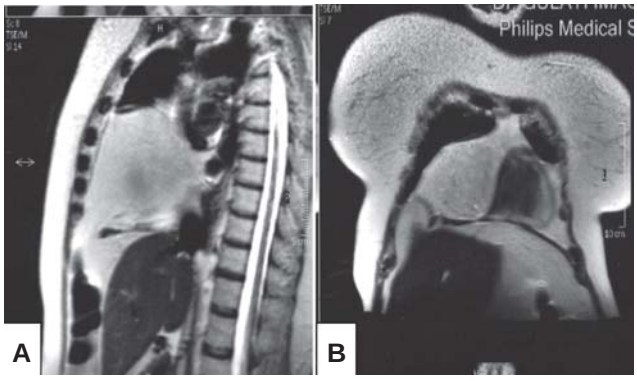

Figure 3. Magnetic resonance imaging of the chest (A) (sagittal image) and (B) (coronal image) showing diaphragmatic defect with omental herniation.

The patient refused to go for surgery but is under follow-up.

Discussion

The diaphragm is developed in the embryo during the third week of gestation and is composed of four components: transverse septum, two pleuro-peritoneal folds, cervical myotomes and dorsal mesentery. Its development is completed between 8th and 10th week of gestation. Various type of congenital defects determine the development of congenital diaphragmatic hernias, like lack of development or inappropriate migration of the pleuro-peritoneal folds, absence of the diaphragmatic musculature or weakness in the embryological points of fusion.[5] Hernia of Morgagni occurs as a result of defect in fusion of septum transversum of diaphragm and costal cartilages. It was first described by Giovanni Battista Morgagni, an Italian anatomist and pathologist in 1769.[2] Morgagni hernias are rare diaphragmatic hernias, usually occurring on the right and located in the anterior mediastinum. These hernias are described as an anterior diaphragmatic defect because of retrosternal location of foramen of Morgagni. In adults, these hernias are associated with increased intra-abdominal pressure because of obesity, trauma, weight lifting etc.[6]

These may have a varied presentation ranging from being asymptomatic to presenting with life-threatening complications like obstruction or strangulation. However majority of patients present with vague non-specific respiratory or gastro-intestinal symptoms.[2] Our patient was also being treated for vague respiratory complaints since one year. This kind of presentation may lead to delay in diagnosis and the patient may land up in complications.

Various imaging methods have been used for the diagnosis of diaphragmatic hernias including chest radiography, fluoroscopy, gastrointestinal contrast studies, sonography, CECT and MRI.[7] The appearance on chest radiography may vary depending on the content of hernia that is whether omentum, stomach, small intestine or liver.[2] In our case omentum was the content of hernia sac which appeared as a rounded paracardiac shadow, hence, a differential diagnosis of intrathoracic tumour or pericardial cyst was kept in mind. The sensitivity is further decreased in cases with involvement of the right side. The role of sonography is mainly limited to the antenatal detection of congenital diaphragmatic hernias. CECT also has limitations in evaluation of diaphragm.[7] Although helical CT provides good-quality sagittal and coronal reformation images, any respiratory motion artifact can mimic a diaphragmatic defect especially on the right side with pseudoherniation of the liver.[8] However, MRI can be used reliably to diagnose or exclude diaphragmatic abnormality.[9] It provides direct coronal and sagittal images which enables optimal visualisation of the entire hemidiaphragm when motion is limited by respiratory and cardiac gating. MRI has superior soft tissue contrast as compared to CECT and coupled with direct multiplanar imaging it can demonstrate the diaphragmatic defect clearly. The continuity of omental fat in abdominal and thoracic cavity can be easily documented. Presence of omental vessels seen as flow void areas on planar scan add to the diagnosis. Thus, MRI can be reliably used in cases with uncertain CT diagnosis or delayed presentation of diaphragmatic defects.[8]

In our case because of high fat content of omentum a possibility of mediastinal lipomatosis was kept on CECT chest but few sections showed a possible diaphragmatic defect. However, MRI demonstrated an anterior diaphragmatic defect and omental vessels confirming the diagnosis of hernia.

In conclusion, diaphragmatic hernias being rare in adult population are usually not suspected. Diagnostic delay, however, can lead to long-term sequelae that can present from a few days to many years. Various complications include respiratory compromise due to a volume effect, pleural collection, pneumoperitoneum and intestinal obstruction or strangulation.[10] Although complications are rare, hernia of Morgagni foramen should be repaired because of risk of strangulation.[11]

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