

# Morgagni hernia – a cause of opacification on a chest radiograph

<sup>1</sup>AG Wallis, <sup>2</sup>J Arora, <sup>3</sup>NL Bishop

<sup>1</sup>Specialty Registrar, Radiology, University Hospitals Bristol NHS Trust; <sup>2</sup>Consultant Radiologist, Poole Hospital NHS Foundation Trust;

<sup>3</sup>Consultant Radiologist, University Hospitals Bristol NHS Trust, Bristol, UK

**ABSTRACT** Morgagni hernias are often misdiagnosed as a consolidation or collapse of the right middle lobe, and should be considered in the differential diagnosis of opacification at the right cardiophrenic angle. They are a form of congenital diaphragmatic hernia and are best demonstrated on multidetector computed tomography. Medical management will help alleviate gastrointestinal symptoms, but curative management is usually surgical to prevent the complication of strangulation.

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Correspondence to A Wallis,  
Department of Clinical Radiology,  
Bristol Royal Infirmary,  
Upper Maudlin Street,  
Bristol BS1 3NU, UK

tel. +44 (0)1179 230000  
e-mail aw7823@hotmail.com

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## CASE REPORT

A 69-year-old woman with a medical history of breast cancer and rheumatoid arthritis was admitted to hospital with a short history of right upper quadrant pain. A chest radiograph demonstrated soft tissue density at the right cardiophrenic angle (Figure 1). The possibility of a mass lesion was considered because of the patient's medical history and the lack of raised inflammatory markers and chest symptoms. Contrast-enhanced multislice computed tomography (CT) with multiplanar reconstruction demonstrated a Morgagni hernia (Figure 2). The patient was discharged and is being considered for definitive surgery to repair the defect.



**FIGURE 1** A 69-year-old woman with a medical history of breast cancer and rheumatoid arthritis was admitted to hospital with a short history of right upper quadrant pain. A chest radiograph demonstrated opacification at the right cardiophrenic angle.

## DISCUSSION

Defects involving an abnormal development of the diaphragm are referred to as congenital diaphragmatic hernias (CDH). Within this group, Bochdalek hernias, which are most commonly left-sided and always posterior, are the most common. Morgagni hernias represent only 3% of all diaphragmatic hernias.<sup>1</sup> Other forms of CDH are central tendon defects and congenital diaphragmatic eventration. These hernias are more common in obese patients<sup>2</sup> and in those with other conditions that lead to raised intra-abdominal pressure, including pregnancy, trauma, chronic constipation and chronic cough.<sup>3</sup>

The majority of Morgagni hernias are right-sided due to the protection afforded by the extensive pericardial attachments to the diaphragm.<sup>4</sup> They involve herniation through a potential space known as the foramen of Morgagni, which is formed as musculo-fibrotendinous elements of the diaphragm (originating at the xiphoid process and passing to the central tendon of the diaphragm) fail to fuse.<sup>5</sup> The viscus most commonly found to herniate is the transverse colon (in 60% of patients), but the liver,



**FIGURE 2** Axial CT demonstrating Morgagni hernia (arrow) at the anteromedial aspect of the right hemidiaphragm.

mesenteric fat and, rarely, the stomach may also herniate.<sup>1</sup> In contrast to Bochdalek hernias, Morgagni hernias only rarely present with respiratory distress at birth. Recurrent chest infections and gastrointestinal symptoms such as nausea, vomiting and bloating have been reported,<sup>6</sup> although most patients remain asymptomatic. Acute strangulation is a recognised complication in adults, with an incidence of 10–15%.<sup>7</sup>

Most Morgagni hernias are identified incidentally on a chest radiograph as a soft tissue density of the right cardiophrenic angle. The appearance may be of gas- or fluid-filled structures in the anterior mediastinum. Other diagnoses to consider are the Bochdalek hernia, right middle lobe collapse, neurofibroma, consolidation, lung sequestration, pericardial fat pad, lymphoma and thymic tumours.<sup>8</sup> Where uncertainty exists, lateral chest radiography and barium studies may help distinguish between these. Patient symptoms will help to guide the clinician. A history of malignancy should not lead to the immediate conclusion of metastatic disease until imaging has excluded a hernia as the cause of the mass.

Magnetic resonance imaging is able to demonstrate the hernia,<sup>5</sup> but CT remains the investigation of choice and, in one small retrospective study, has been shown to

confirm the diagnosis in 100% of cases.<sup>4</sup> Multidetector CT with multiplanar reconstruction can play a more active role in identification of the hernia site, its level and the cause of any small bowel obstruction, including internal hernias, diaphragmatic hernias such as Morgagni hernias and/or associated gastric volvulus.<sup>9</sup> Computed tomography may show a contrast-filled bowel within the chest or a fatty density mass, with Hounsfield units ranging from –80 to –120. Curvilinear densities within this are likely to represent vessels within the omentum.

The prevalence of Morgagni hernias has not been reported, and no comparison exists between surgical and conservative management. In adults and children surgery remains the definitive treatment modality, and is advocated due to the risk of strangulation in symptomatic and asymptomatic patients.<sup>10</sup> Conservative treatment is reserved for those who are otherwise unfit. Proton pump inhibitors may provide symptomatic relief in patients with a herniated stomach. Traditionally, repair has been by open abdominal or thoracic approaches, but recent advances in minimally invasive surgery have made the laparoscopic and thoracoscopic treatment of Morgagni hernias possible, with rapid recovery of patients. A recent review gives a more detailed account of the surgical management.<sup>10</sup>

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