Transthoracic Repair of Asymptomatic Morgagni Hernia in an Adult

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Abstract Morgagni hernia represents a rare type of diaphragmatic hernia which usually occurs on the right side, in the anterior mediastinum. Predisposing factors of Morgagni hernia include pregnancy, obesity or other causes of increased intraabdominal pressure, and a history of trauma. Most of adults diagnosed with a foramen of Morgagni are asymptomatic. We report a case of an overweight 23-year-old asymptomatic patient with a Morgagni hernia incidentally diagnosed on chest x-ray. There was a satisfactory result after the repair by a transthoracic approach.

Keywords Foramen of Morgagni · Diaphragm · Hernia · Thoracotomy

Introduction

Morgagni hernia is a rare type of congenital hernia in which abdominal contents have herniated through an anterior-medial defect in the diaphragm into the chest cavity [1]. It was firstly described by Giovanni Battista Morgagni in 1761 [2]. In adults, it is usually asymptomatic and is found incidentally during laparoscopy or imaging study for another condition. Due to the position of the hernia defect, between the thorax and the abdomen, the surgical approach is of particular importance. We present the clinical and radiologist findings of an obese male patient with an incidentally diagnosed Morgagni hernia along with the surgical procedure performed.

Case Presentation

A 23-year-old obese male (body mass index: 41.5) with a Morgagni hernia, incidentally diagnosed on a chest x-ray, was admitted. He was asymptomatic. His medical history revealed allergy to penicillin. On physical examination, the percussion with auscultation of the thorax revealed areas of tympanism and bowel sounds in the right hemithorax. Routine hematologic and blood biochemistry results were normal. Chest x-ray showed an intrathoracic mass located in the right hemithorax (Fig. 1) while computed tomography (CT) revealed that the hernia sac included omentum and transverse colon (Fig. 2). No sign of visceral strangulation was present. The volume of the hernia sac was calculated around 1,000 cm³ and the defect in the diaphragm was measuring 10×8 cm.

The preferred surgical approach was right lateral thoracotomy through the sixth intercostal space. Adhesions of the hernia sac were lysed with blunt and sharp dissection with special attention given to those of the pericardium. When opened, the sac was found to contain omentum and transverse colon which were easily reduced. A 15×10 cm piece of expanded polypropylene dual mesh (Gore-Tex® W.L. Gore and Associates, Flagstaff, Arizona, USA) was used for the closure of the diaphragm defect and stitches were applied between the mesh and diaphragmatic leaves, beginning from the cardiophrenic angle with interrupted No 0 Gore-Tex® sutures (Fig. 3). The use of prosthetic mesh was necessary as the defect was large and the surface of the diaphragmatic leaves was not enough for the closure repair. The patient had an uneventful postoperative course and was discharged the sixth postoperative day. There were no signs of recurrence 12 months after the operation.

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Fig. 1 Chest x-ray shows an intrathoracic mass located in the right hemithorax

Discussion

Morgagni hernia is located just posterolateral to the sternum. It is the rarest of the congenital diaphragmatic hernias and represents 3% of them [3]. The hernia sac is promoted by a congenital defect in the fusion of septum transverses of the diaphragm and the costal arches [3]. The herniation develops mostly on the right side of the diaphragm but it can also occur bilaterally and rarely on the left side because of the protection by the pericardial sac [4]. Morgagni hernia usually contains transverse colon, liver, omentum, and rarely small bowel or stomach [4]. The herniated structure in the case presented here was omentum and transverse colon.

Fig. 2 Chest CT demonstrates the paracardiac hernia sac with its content included omentum and transverse colon

Fig. 3 The hernia sac was opened and its content reduced into the peritoneal cavity while the diaphragm defect was repaired using synthetic mesh

Approximately 50%–70% of cases are asymptomatic and occur to 50-year-old or older female patients [4]. Symptoms may appear occasionally as a result of visceral strangulation or acute respiratory distress and include shortness of breath, nausea, vomiting, anorexia, dysphagia, and abdominal distension [4]. Although our patient was asymptomatic, he was obese, and as has been reported the increased weight acts as stress factor of Morgagni hernia [5].

Diagnosis is confirmed by chest or abdominal x-ray, barium studies, ultrasound examination, CT, and magnetic resonance imaging [1]. In this reported case, diagnosis was made by chest x-ray and confirmed by CT which makes the correct diagnosis in 100% of cases in a recent series [4]. Differential diagnosis may include lipomas, liposarcomas, pleuro-pericardial cysts, mesotheliomas, thymomas, pericardial fat mass, anterior chest wall tumours and diaphragmatic cysts and tumours [4].

Various surgical procedures such as transabdominal or transthoracic approaches have been recommended for the repair of Morgagni hernia. Transabdominal approach is favoured in cases with bilateral and complicated hernia sac, although it can be a difficult approach in obese patients as the hernia sac can remain developing a cyst later [3]. Transthoracic approach provides an easy repair of the hernia defect with uneventful recoveries and no recurrence of symptoms [6]. Recently, both laparoscopic and thoracoscopic repairs of these hernias have been described [4]. In our presented case, we recommend the transthoracic approach due to the fact that provides sufficient exposure and easy repair of the diaphragmatic defect while the adhesions, especially to the pericardium, can be released safely and easily.

In conclusion, even asymptomatic cases of Morgagni hernia should be repaired surgically because complications

may occur. Simple investigation such as chest X-ray may be valuable in detecting these hernias. The transthoracic approach would be the first line method of repair providing a wide exposure of the hernia, leaving the sac alone and using a prosthetic mesh which provides a good tension-free repair.

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