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INCIDENTALLY DIAGNOSED LARGE ASYMPTOMATIC MORGAGNI HERNIA IN ADULT MALE PATIENT

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ABSTRACT

Background: Congenital diaphragmatic hernias are rare congenital defects resulting in abdominal organ protrusion into the thoracic cavity; they mainly present with pulmonary or gastrointestinal symptoms. Although congenital and discovered in utero or in early childhood, they can be asymptomatic for a long time and even remain asymptomatic despite the growing hernia sac dimensions and the hernia sac contents.

Case description: We present a case of a 58-year-old patient with incidentally diagnosed Morgagni hernia during the COVID-19 pandemic following a computerised tomography (CT) scan of the chest. He presented without any symptoms related to the existence of the hernia. Another CT scan was performed 20 months after the initial diagnosis to evaluate the progression of the hernia. The patient refused the offered surgery due to the absence of symptoms.

Discussion: A Morgagni hernia is usually discovered during pregnancy or in early childhood, but sometimes can be asymptomatic for years. Main symptoms originate from the respiratory and gastrointestinal system.

Conclusion: Due to the refusal of surgery, we were able to follow the CT scan enlargement progression of patients' hernia over a 20-month period.

KEYWORDS

Morgagni hernia, diaphfragmatic hernia, hernia repair, Morgagni hernia in adult

LEARNING POINTS

- Congenital diaphragmatic Morgagni hernias can remain undiscovered for a long period of time.
- Despite the usual clinical presentation with pulmonary and/or gastrointestinal symptoms, it can be asymptomatic in some patients.
- Surgery is the recommended treatment for a Morgagni hernia (via the thoracic or abdominal access).

INTRODUCTION

Diaphragmatic hernias are a result of a congenital birth defect of the diaphragmatic wall. Two main forms of diaphragmatic hernias are described: the Bochdalek hernia, occurring in the posterolateral side and being accountable for around 70% of cases, and the Morgagni hernia accounting for about 30%

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of cases (the rarest) involving the anteromedial wall[1]. The diagnosis is typically established during childhood due to the presence of respiratory (56.5%), gastrointestinal (19%) or combined symptoms (6.8%)[2]. However, in asymptomatic cases, the diagnosis can be an incidental finding at any age. We present a case of an incidentally diagnosed Morgagni hernia in 58-year-old male patient who rejected surgery for his condition. As a result, it allowed us to present this case in terms of hernia progression seen on a computerised tomography (CT) scan over a certain time frame.

CASE PRESENTATION

A 58-year-old patient presented to the outpatient clinic for a consultative medical check-up in December 2021. The patient's medical history revealed hypertension and cholelithiasis. Previously, the patient had a computerised tomography (CT) scan of the thorax and abdomen in April 2019 during the COVID-19 pandemic, due to a positive SARS-CoV-2 test. A chest X-ray had not been performed since in the time of the COVID-19 pandemic as the main diagnostic tool for confirmation or exclusion of 'ground-glass' pulmonary opacity was the chest CT scan. Pulmonary abnormalities in terms of a COVID-19 complication were excluded with the scan and an incidental finding of diaphragmatic Morgagni hernia was confirmed *(Fig.1, 2 and 3)*. The patient rejected the surgery that was offered at that point, due to absence of any symptoms (pulmonary and gastrointestinal) related to the condition. A repeat CT scan was ordered to evaluate the hernia progression in December 2021 (20 months after initial diagnosis). It revealed enlargement of the hernia sac in comparison to the previous CT scan, with interposed hepatic flexure and part of the transverse colon as well as the mesenteric fat tissue exerting significant compression of the mediastinal structures backwards and to the left *(Fig. 4, 5 and 6)*. Again, a laparoscopic hernia repair with dual mesh was advised to the patient and again, it was rejected due to a lack of symptoms.

DISCUSSION

A Morgagni hernia is a developmental closure defect of the diaphragm resulting in protrusion of the abdominal organs in the thoracic cavity. In most cases this results in lung developmental abnormalities, which is shown to be extremely rare in adulthood – only in about 2–4 % of cases[3]. The reported prevalence rate is 1 in 3,000 live births. Organs usually present in the hernia sac are the greater omentum (in most cases) followed by the bowel, liver and stomach[4]. According to gender, there is a slight male predominance[5].

In more than 70% of cases the aetiology is unknown. In 10% of patients, a single gene mutation is confirmed and in rare cases certain environmental factors, vitamin A deficiency and drug teratogenicity by allopurinol, mycophenolate mofetil and lithium carbonate have been reported. Inheritance patterns were present in some cases and others appear as a result of *de novo* mutations[4].

Clinical manifestation is usually present in early childhood

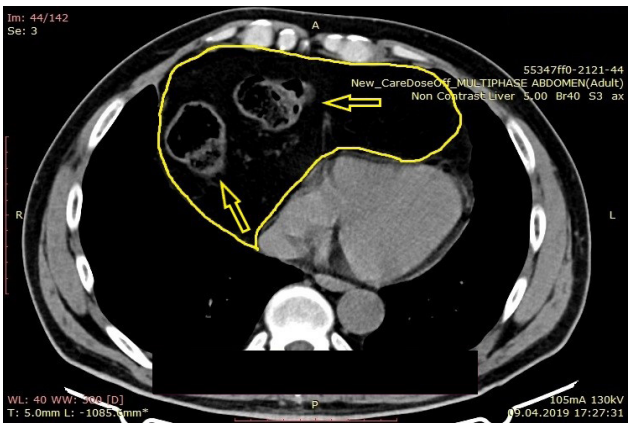

Figure 1. Computerised abdominal tomography (axial scan) performed in April 2019, showing a large Morgagni hernia (yellow outline) with herniation of the large bowel loop (yellow arrows)

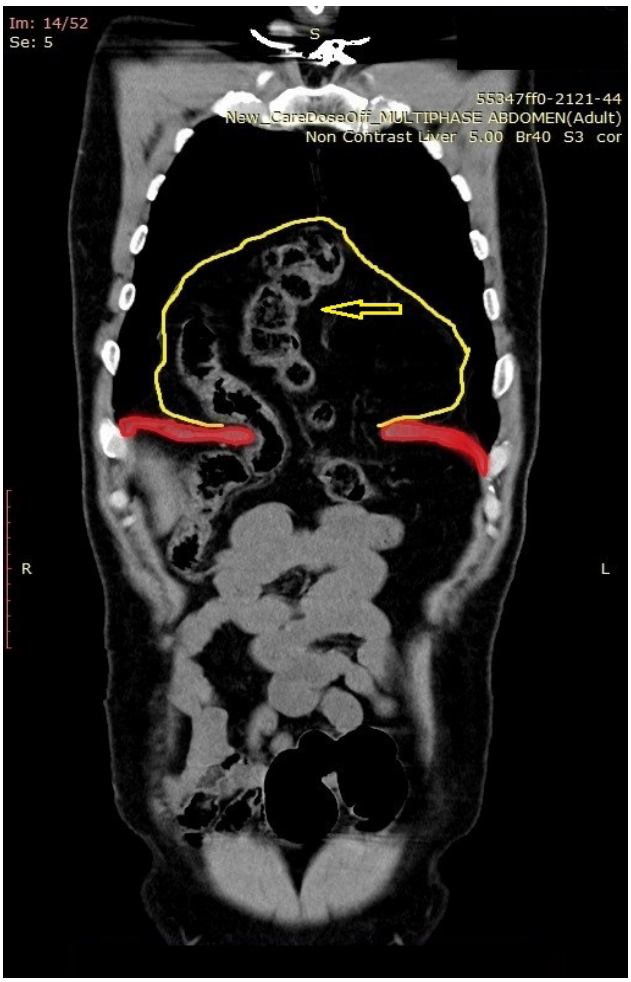

Figure 2. Computerised abdominal tomography (coronal scan) performed in April 2019, showing the diaphragm (red outline) with hernia defect and protruded hernia sac (yellow outline) with a loop of transverse colon as the hernia sac content (yellow arrow)

with symptoms of respiratory distress and tachypnoea (20–73%), recurrent pulmonary infections (29-55%), poor feeding, failure to thrive, coughing and choking. About 12 cases described in the literature stay silent until adulthood where they present as retrosternal chest pain relieved by standing, and dyspnoea, flatulence, indigestion and cramping[6,7]. However, about 81 cases remain as adult

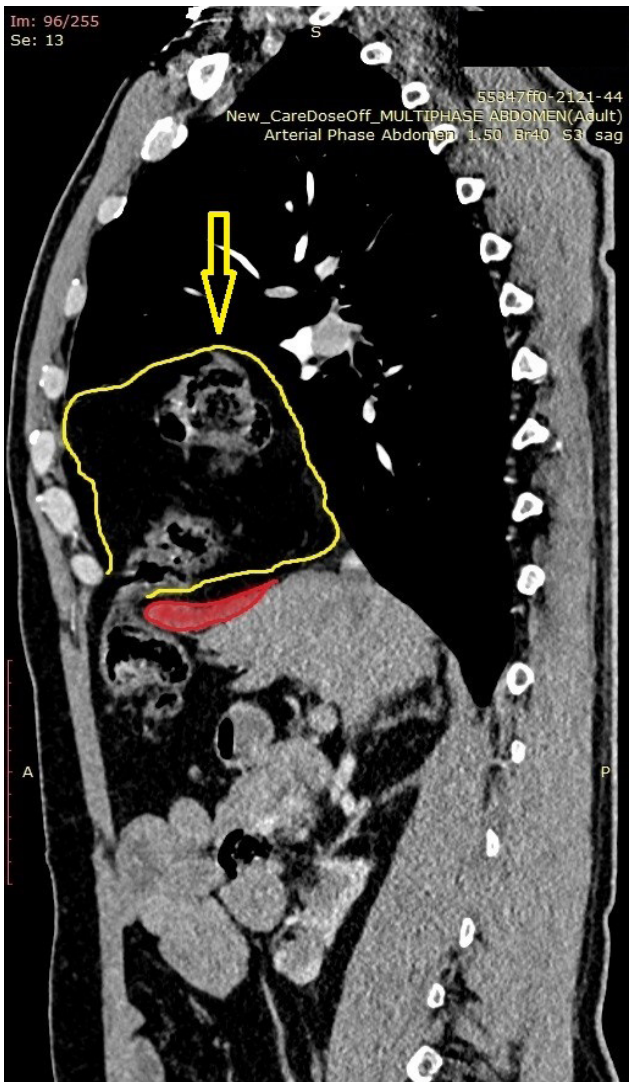

Figure 3. Computerised abdominal tomography (sagittal scan) performed in April 2019, showing an evident hernia sac (yellow outline), hernia content of the large bowel (yellow arrow) and the anatomical topography of the diaphragm defect (red outline)

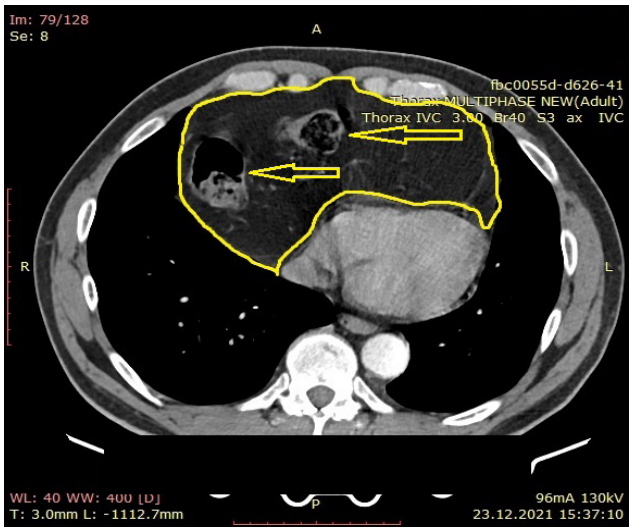

Figure 4. Computerised tomography of thorax (axial scan) performed in December 2021, confirmed the Morgagni hernia existence (yellow outline) with herniation of the large bowel loop (yellow arrows). The hernia sac presented with relative enlargement when compared to the previous scan from April 2019 (as shown in Figure 1)

asymptomatic patients such as in this case, described in a review by Loong and Kocher[8].

In 60% of patients the diagnosis is established prenatally, directly with ultrasonography where the presence of abdominal organs is visualised in the thoracic cavity or indirectly with signs of polyhydramnios, mediastinal shift and/or abnormal cardiac axis. After diagnosis, an ultrafast foetal MRI is often used to define the anatomy in a better way. Further investigations such as foetal echocardiography should be done to rule out left ventricular hypoplasia, and amniocentesis is required for cariotypisation. All the diagnostic tools used in prenatal examination are useful

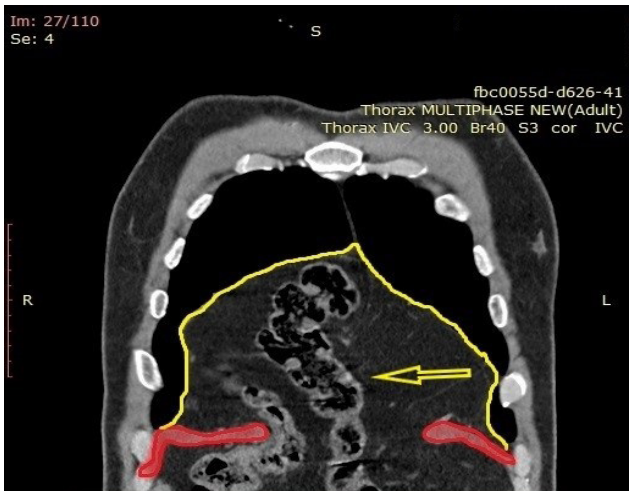

Figure 5. Computerised tomography of thorax (coronal scan) performed in December 2021, revealed the presence of a hernia sac (yellow outline) with evident enlargement when compared with the finding from April 2019 (Figure 2). Presence of the transverse colon loop is evident (yellow arrow). The hernia defect of the diaphragm (red outline) did not present with significant radiologic difference when compared with the previous finding from April 2019, shown in Figure 2

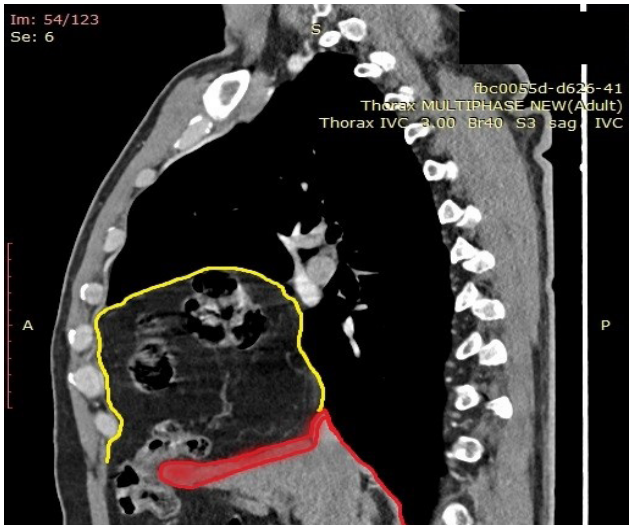

Figure 6. Computerised tomography of thorax (sagittal scan) performed in December 2021 presented without significant radiologic differences in terms of enlargement of the hernia sac (yellow outline) and its content of a large bowel loop (yellow arrow). The diaphragm defect (red outline) is comparable in size with the one from April 2019 shown in Figure 3

when determining the possibility of high-risk patients and the objective need for foetal surgery. However, final decisions for these patients are based on ultrasound findings[9,10].

Chest X-ray and CT scans are most often used diagnostic tools in the postnatal diagnosis of a Morgagni hernia. The method of choice is highly dependent on the clinical presentation. Other available but less-used modalities include abdominal ultrasound, barium contrast studies, upper gastrointestinal endoscopy and magnetic resonance imaging[3].

Surgery is the only treatment in the case of a Morgagni hernia. The requirement for surgery is largely dependent upon the presentation[7]. Nevertheless, recent reports suggest surgical intervention due to potential life-threating complications, with strangulation being the most common. Exact guidelines are not present for the management of the condition. Currently there are various possible techniques, each of them with certain advantages and disadvantages (laparotomy, laparoscopy, open thoracic approach via median sternotomy, or thoracotomy and thoracoscopy)[5].

The optimal technique is the one the surgeon is most comfortable with, but always having in mind the patients' best interest. In complicated cases with bowel obstruction and bilateral diaphragmatic defects, a transabdominal approach is shown to be the best due to the exiting intra-abdominal adhesions and enabled inspection of the intra-abdominal organs. Yet, it is associated with prolonged recovery time, poor cosmetic results and a higher rate of wound complications. In a right-sided hernia, a transthoracic approach is advised with known limitations (restricted abdominal exploration and suboptimal conditions for removal of the hernia sac). Minimally invasive surgery is the first choice in uncomplicated (elective) cases with less than 2% of hernia recurrence rate reported. Laparoscopy remains a gold standard approach in paediatric patients. The use of prosthetic material (mesh) in the hernia repair is controversial due to possible adhesions with intrathoracic organs. However, if appropriate prosthetic material is used (dual mesh), it can reduce the occurrence of this complication[5].

A short-case series and literature review by Târcoveanu et al. suggest the decision on the use of mesh or suture repair should be based on the hernia defect size. When operating laparoscopically, defects less than 6 cm can be managed with primary suture repair. For hernia defects larger than 7 cm, mesh repair is advised. With open surgery, the criteria differ and mesh is advised for defects larger than 8 cm[2].

Rarely, a Morgagni hernia can be undiscovered for a long period in the life of a patient. And even more rarely, with large dimensions, it can still be asymptomatic. Therefore, if there is nothing to raise suspicion this might not help the clinician to diagnose one. Due to the unwillingness of the patient to accept the surgery in this case, the progression of the Morgagni hernia is evident and present in the CT scans performed over a time frame of 20 months. Follow-up in such cases might be controversial due to repeated radiation, but there should be an awareness of the possible acute life-threatening complications if it is left untreated and not monitored.

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