ACTA MEDICA TRANSILVANICA March27(1):34-36
Online ISSN 2285-7079

THORACIC-ABDOMINAL HERNIA - CASE PRESENTATION

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Keywords: *hernia, thoracic wall, abdominal wall*

Abstract: *Thoracic hernia, described as the protrusion of the lung through the chest wall, is one of the rarest pathologies and can be post-traumatic, post-thoracotomies, spontaneous or congenital. After chest trauma, the thoracic hernia can occur immediately, and in some other cases, spontaneous or congenital intercostal hernias can be both symptomatic and asymptomatic. The most common complications are incarceration, followed by strangulation, which can lead even to death in the absence of surgical treatment. Case presentation: we aim to present a 70-year patient with no history of chest trauma or chest surgery admitted to our clinic complaining of a painless, protrusive, expansive tumour of approximately 4x10 cm on VII-IX intercostal space. After clinical examination and imaging investigations, the diagnosis of thoracic hernia was sustained. After appropriate preoperative preparation, the surgical intervention was performed, which consisted of preparation of the diaphragmatic hernia sac, discovered intra-operatively, followed by folding diaphragm suture, peri-costal fixation of the adjacent ribs, and a restoration of the abdominal wall with a Pro-Grip synthetic mesh, (associated abdominal hernia), followed by pleural and subcutaneous drainages. The patient's evolution was a good one, and on the 8th postoperative day was discharged in good condition. Conclusions: although some thoracic hernias benefit from conservative treatment and sometimes clinical surveillance is accepted, surgical treatment is the gold standard for intercostal pulmonary hernias, which prevents complications. Over time, many surgical techniques have been discussed and implemented, but the most important thing nowadays is the management*

INTRODUCTION

First described in 1499 by Roland and later classified by Morel-Lavalle in 1847, intercostal hernia remains one of the rarest pathologies defined as the protrusion of the lung parenchyma through the chest wall.(1-3) This occurs due to chest trauma or post thoracotomies but can also be congenital or spontaneous.(4) The spontaneous intercostal hernia is common in patients with morbid obesity, diabetes mellitus, COPD, or chronic corticosteroid use. It is due to intercostal muscle weakness caused by increased intra-thoracic pressure.(1) In case of chest trauma, a pulmonary hernia may occur immediately and be associated with hemothorax/ pneumothorax. In the case of post-procedural or spontaneous hernias, the symptoms appear over time. They can be both asymptomatic and symptomatic, with the appearance of a wide subcutaneous bulge in the chest, accompanied by local pain or hematoma and often associated with dyspnea.(5) Among the most severe complications , we can mention strangulation or incarceration of the hernia, when the patient suddenly associates hemoptysis with the initial symptoms. Along with the clinical examination, an essential part in diagnosing intercostal hernias is played by chest Computer Tomography, both with iv. contrast substance and with 3D reconstruction.(6) The only treatment is the surgical one, which consists of chest wall repair by thoracotomy or video-assisted thoracoscopy.(7-8)

CASE REPORT

We present the case of a 70-year-old patient who is admitted to our Clinic with a painless protrusive, expansive tumour of approximately 4x10 cm on the VII-IX left intercostal space mobile due to inspiration/expiration. The appearance of these symptoms began one month ago, spontaneously due to a coughing effort. There is no history of thoracoabdominal trauma from the patient's anamnesis (figure no. 1).

Figure no. 1. Thoraco-abdominal hernia

We need to say that the patient is a non-smoker and does not mention the existence of persistent cough episodes, but

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Article received on 28.02.2021 and accepted for publication on 16.03.2020

has high blood pressure under antihypertensive treatment, Grade II mitral regurgitation, dilated cardiomyopathy, major right bundle branch block, left ventricular failure NYHA II, atrial fibrillation with anticoagulant therapy, asthma, non-insulin diabetes and obesity grade II. To support the diagnosis of intercostal hernia, in addition to the clinical examination, which highlights the tumour at the left thoracic level, expansive, soft consistency, with the distancing of the intercostal space VII and vesicular murmur present at auscultation, comes the CT examination describing an aspect of pulmonary hernia at the level of the left intercostal space VII-IX with the widening of the intercostal space and hematoma along the intercostal space extending along with the deep fatty tissue concerning the deep surface of the latissimus dorsi muscle stretching into the subpleural tissue in relation with the posterior apical segment of the Left Lower Lobe associating thin left basal pleural collection.

After a preoperative preparation consisting of a pneumological consultation and the interruption of the anticoagulant treatment with Apixaban and its replacement with Enoxaparin in a therapeutic dose, the surgical intervention is decided. It consists of an exploratory thoracotomy at the level of the eighth intercostal space where besides the relaxation of the intercostal muscles (figure no. 2) there was found a fracture of the costal rim and the existence of a diaphragmatic hernia sac of approximately 10x8 cm (figure no. 3) which contains loops of the small intestine, colon, and omentum adhering to the sac while producing the ascent of the diaphragm.

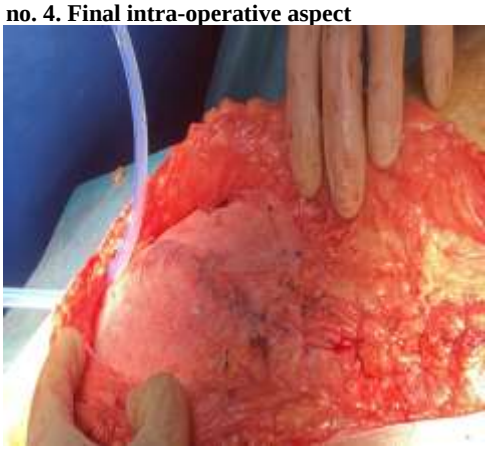
Figure no. 2. Intra-operative appearance, intercostal parietal defect, the pulmonary hernia is highlighted

At the same time, the existence of a muscular relaxation at the level of the right abdominal muscle was detected, which generated a parietal defect of 6x6 cm.

Figure no. 3. Intra-operative appearance, the diaphragmatic hernia sac

After preparing the diaphragmatic hernia sac, we practiced a folding diaphragm suture, followed by thoracoplasty with separate sutures (figure no. 4), and afterwards, a restoration of the abdominal wall with a Pro-Grip synthetic mesh arranged over-aponeurotic, followed by a passive left pleural drainage, Beclaire type, and subcutaneous drainage, Redon type.

Figure no. 4. Final intra-operative aspect



Due to the associated pathologies, the patient required a postoperative follow-up in the Intensive Care Unit for three days, later being transferred to the Surgery Clinic.

The postoperative evolution was favourable; the patient resumed his intestinal transit; after four days postoperatively, he did not need O_2 intake on the nasal mask. The number of secretions on the Redon drain tube decreased, which justified its suppression. On the 7th postoperative day, he underwent thoracic radiography. It was decided to remove the pleural drainage tube, finding that the lungs were expanded at the thoracic wall and that the pleural collections were absent (figure no. 5).

Figure no. 5. Postoperative radiological appearance

The postoperative evolution being favourable, the patient was discharged on the 8th postoperative day with the recommendations of pulmonary, cardiologic follow-up, and resumption of the anticoagulant treatment with Apixaban.

DISCUSSIONS

A rare pathology, pulmonary or intercostal hernia, often poses unique treatment problems in clinical practice. After the Morel-Lavalle classification, from the etiological point of view, post-traumatic hernias represent 52%, followed by a rate

of 30% for spontaneous hernias and a rate of 18% for congenital hernias. 66% of thoracic hernias occur most at the site of chest weakness, most of which result from severe thoracic trauma or thoracic surgery. This type of hernia can often be associated with diaphragmatic hernias, mainly if the thoracic hernia affects the lower thoracic wall at the seventh intercostal space.(5,8)

In the case of spontaneous pulmonary hernias, a vital role in their appearance is played by the increase of intra-thoracic pressure, which is often found in patients with chronic cough and occur mainly in patients suffering from COPD.(1,9) Usually, the diagnosis of pulmonary hernia can be supported by the presence of a broad tumour mass in the chest wall, which protrudes in the intercostal space and is sometimes accompanied by pain, with the simultaneous presence of a chest hematoma and dyspnea. However, imaging investigations help support the diagnosis, which identifies the exact location and the parietal defect, especially while the patient is performing the Valsalva maneuver, and allows the surgeon to establish a preoperative plan to close the parietal defect.(7,10)

Among the most common complications in patients with a hernia of the thoracic wall is incarceration followed by strangulation, where ischemia followed by necrosis of the lung tissue can occur. Both conservative and surgical treatments have been so far accepted in this condition. Suppose conventional treatment and regular clinical surveillance are currently accepted in the case of supra-clavicular pulmonary hernias, in that case, the indication for surgical treatment is absolute in the case of intercostal pulmonary hernias due to the high risk of incarceration.(11)

Regarding the repair of the parietal defect, many methods have been used over time, from Munell, who advocated the use of autologous materials, Goverde describing sufficient peri-costal fixation of the adjacent ribs, Brock and Heitmiller, who used the abdominal fascia as a “Patch” after the repair of the peri-costal defect, Ross and Burnett performing a two-layer thoracoplasty, until the use of synthetic prostheses (Marlex, Vycril, Goretex) in recent years, more and more authors recommend the thoracoscopic approach in these cases.(10) And yet, not a single therapeutic method can be supported in this pathology, more critical being the management and individuality of every patient’s treatment.

The peculiarity of the case presented by us is the appearance of a thoracoabdominal wall hernia, in an obese patient, without a precise etiology and a history of traumatic pathology.

CONCLUSIONS

Thoracic wall hernias can often be associated with diaphragmatic hernias. At the time of diagnosis, surgical treatment of thoracic wall hernias is an absolute indication due to complications that may occur in these cases.

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