Case report

Thoracic herniation secondary to pleural effusion

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A R T I C L E   I N F O

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A B S T R A C T

We present the case of a 61-year-old gentleman with history of stage IV esophageal cancer presented to the emergency department with the complaints of dyspnea on exertion and cough of 1-month duration. Patient had undergone resection of distal esophagus 4 years prior this admission. Chest radiograph revealed a large right pleural effusion and, a computed tomography scan of the chest revealed a portion of the effusion herniating between the ribs in the right hemithorax. Thoracentesis was performed with improvement in patient's dyspnea and overall condition. Patient was doing better and asymptomatic on his 3-month follow-up. Inadequate closure after surgical procedure can lead to presentation of a lung herniation. This can appear immediately after or many years later. Video-assisted thoracoscopy has been attributed to post-operative presentation of thoracic hernias when compared to more extensive operative procedures.

1. Introduction

Thoracic lung herniation is a rare condition. It is usually acquired after severe trauma, where part of the lung's parenchyma and pleura protrude beyond the thoracic wall, neck or diaphragm [1]. Management remains controversial and the incidence is not well known [1–3]. We recently had one such case.

2. Case presentation

A 61-year-old gentleman presented to the emergency department with dyspnea on exertion and productive cough for more than a month. He had the history of stage four esophageal cancer with metastasis to liver and biliary ducts. Four years prior to this presentation, he underwent a right lateral thoracotomy for distal esophageal resection followed by chemotherapy. On initial physical examination, patient was short of breath and in visible distress. Blood pressure was 160/100 mm Hg, respiratory rate 28/min, heart rate 110/min, temperature 37 °C and oxygen saturation of 90% while breathing room air. Lung examination was significant for decreased breath sounds in the right lung base. In addition, a soft bulging mass approximately of 10 cm was noted on the right posterolateral thoracic wall. Laboratory tests were unremarkable.

A chest radiograph revealed a large right-sided pleural effusion (See Fig. 1). Computed tomography of the chest depicted a portion of this effusion herniating between the ribs (See Figs. 2 and 3). 2500 cc of serosanguinous fluid was removed via ultrasound-guided thoracentesis. Light's criteria were consistent with a transudative effusion and cytology was negative for any malignant cells. Patient was discharged home in a stable condition after two days stay in the hospital. Patient was asymptomatic on his three-month follow-up visit with no re-accumulation of the pleural fluid.

3. Discussion

Thoracic hernias are rare conditions characterized by the protrusion of lung parenchyma outside the thoracic cage [1]. Approximately 66% of thoracic hernias push through a weak area in the chest wall, usually acquired after severe thoracic trauma; the rest of the hernias involve the neck and, very rarely, the diaphragm [2,3]. The first reported case of thoracic herniation was described by Roland in the 15th century. Thoracic hernias were classified by Morel-Lavallée depending on localization and etiology [2].

Several cases have been reported in the literature [2–4]. Minai classified the cases by etiology, reporting 64 cases of spontaneous thoracic hernias [4]. Ross and Burnett postulated a lower incidence of
this etiology by reviewing the existing literature that revealed trauma as the underlying cause in most of cases [5]. To-date, the most common cause of acquired thoracic herniation is traumatic, with associated injuries; such as rupture of great vessels, pneumothorax or hemothorax [6]. In patients with spontaneous acquired thoracic herniation, one of the frequent causes is chronic obstructive pulmonary disease. Connective tissue disorders and congenital abnormalities in the chest wall (i.e., rib or intercostal hypoplasia) may cause congenital lung herniation [7]. Frequently-associated symptoms with this condition include pain, persistent cough, shortness of breath and hemoptysis, however, many of these hernias can be completely asymptomatic [8].

Imaging studies play an important role in the diagnosis of thoracic herniation. A chest radiograph helps in making the diagnosis. A Valsalva maneuver (forceful attempted exhalation against a closed glottis) during the imaging study is recommended [9]. Computed tomography with intravenous contrast is considered the gold standard for thoracic herniation, since it evaluates the defect protruding out of the thoracic wall and the viability of the lung parenchyma [10].

There is significant controversy as to the ideal management of these patients. Each case must be individualized depending on the characteristics of the patient and the affected area [11]. Most of the thoracic hernias resolve with a conservative management but, hernias with incarceration and strangulation are candidates for reduction and repair of the defect and removal of non-viable tissue [12].

Our case was particularly interesting, as the primary defect had been caused by an unusual right surgical approach to an esophageal malignancy. In addition, the pleura with the effusion had herniated but not the lung parenchyma. We elected to remove a relatively large amount of fluid, as the patient was quite symptomatic. Retrospectively, we considered the use of pleural manometry to determine the ideal amount of fluid to be removed.

4. Conclusions

Most of these cases are asymptomatic but some patients might complain of dyspnea and localized discomfort at the area of the herniation. A conservative management is usually enough for mild-moderate herniation but for larger herniations surgical approach (periosteal flap) may be necessary. Our patient was successfully treated with a therapeutic thoracentesis with no need for surgical management and remains well to the date.

Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.rmcr.2018.01.003.

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