ORIGINAL RESEARCH PAPER

Radiodiagnosis

LATE COMPLICATIONS OF EXTENDED PLEURECTOMY/DECORTICATION IN A PATIENT WITH METASTATIC THYMIC CARCINOMA: CASE REPORT

KEY WORDS: Empyema, Postoperative complications, Computed Tomography

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ABSTRACT

Thymic carcinoma are uncommon neoplasms, with a particular predilection for pleural disease localizations, that could be treated by extended pleurectomy/decortication. This surgical procedure can be followed by cardiovascular, pleuropulmonary and technical complications, with an acute or late onset (months/years). In this case, a woman 55-years-old with metastatic thimic carcinoma underwent to radical thymectomy, left superior pulmonary lobectomy and left extended pleurectomy/decortication with diaphragmatic prosthesis placement. After 8 years, diaphragmatic prosthesis rupture and empyema were diagnosed at imaging examinations (Computed Tomography and videofluoroscopic swallowing study).

CASE REPORT:

A 55-year-old woman, affected by myasthenia gravis, has been treated with chemotherapy in 2007 for metastatic thymic carcinoma; in 2010, she underwent to radical thymectomy, left superior pulmonary lobectomy and left extended pleurectomy/decortication with diaphragmatic prosthesis placement. In March 2018, the patient presented with severe asthenia and fever for 1 month. No further clinical symptoms were reported and laboratory tests were normal.

IMAGING FINDINGS:

Thoracoabdominal Computed Tomography (CT) was performed: it showed herniation of the gastric bottom in periesophageal site and, in contiguity, a 10 cm formation with a hydroaerial level and a distorted high density patch inside the cavity to be referred to diaphragmatic prosthesis rupture (Figures 1-2). Videofluoroscopic swallowing study was then performed. The introduction of oral contrast agent revealed regular esophageal canalization with fixity and parietal inelasticity. Gastric opacification has shown deformation of the esophagus-gastric joint and deformation with herniation of the gastric bottom on the left (with goose-billed appearance) that appears fixed, adhered to the rib margin. Above this area, a thin and elongated area of radiolucency is evident, in the absence of fistulosis (Figure 3). After a few days from the contrastographic examination, we subjected the patient to an abdomen RX and it showed contrast medium residues in correspondence of the herniated gastric region, above which was highlighted an area of radiotransparency with a hydroaerial level and without comunication with stomach, to be referred to empyema.

The patient underwent surgery, with confirmation of the diagnosis made on imaging examinations; postoperative period was uneventful and she discharged on seventh postoperative day.

DISCUSSION :

Thymic carcinoma are uncommon neoplasms (1-5% of all malignant thymus tumors) and present at an advanced stage in 30% of cases.[1] These tumors have a particular predilection for pleural disease localizations, generally treated by pleurectomy/decortication; it is extended to the diaphragm, to the lung parenchyma or to the pericardium if they are involved in the pathology, [2] as usually performed for the treatment of malignant pleural mesothelioma.[3]

The extended pleurectomy/decortication can be followed by cardiovascular, pleuropulmonary and technical complications, with an acute or late onset (months/years).[3,4] In the last case, the diaphragmatic prosthetic failure, the empyema and the esophagopleural fistula are included. [3,4] In particular, as regards the prosthetic rupture, this is characterized by the possibility of presenting more frequently on the left side, both for anatomical reasons concerning the scarce presence of diaphragmatic anchoring tissue at the left posterior costophrenic corner and for the high pressure determined by the stomach.[5] With regard to late-onset empyema, it is associated with various risk factors including radiation treatment and is generally determined by a hematogenous bacterial spread or by the presence of broncopleural or esophagopleural fistula[6]

The clinical presentation of diaphragmatic prosthesis rupture, as a post-surgical complication, is often silent or non-specific; empyema can instead be characterized by persistent fever, dyspnoea and chest pain.

For diagnosis, imaging is fundamental: it is essential for detecting diaphragmatic rupture and empyema, as well as for assessing the presence of any fistulae, especially esophagopleural ones. The diaphragmatic patch is usually made of expanded polytetrafluoroethylene,[3,5,7] that appears as a linear high density structure on CT; if there is rupture, it has a discontinuous aspect, a change in the position of the patch location (usually elevation) and it is associated with the abdominal viscera herniation, especially the stomach, into the thoracic cavity.[3]

The presence of late empyema caused by an esophagopleuric fistula can be verified or excluded by the videofluoroscopic examination of swallowing.

Imaging is therefore essential to provide the surgeon with all the information necessary for the replacement of the diaphragmatic prosthesis, reduction of the herniated abdominal organs and correction of the empyema with the Clagett window. [3] The post-operative prognosis of these patients is generally good.

CONCLUSION:

Late complications of extended pleurectomy/decortication should not be underestimated, especially in patient with persistent fever of unidentified origin.

DIAGNOSIS: Empyema with diaphragmatic prosthesis rupture.

Differential diagnosis

-Empyema caused by esophagopleural fistula
-Lung abscess

IMAGES

Figure 1

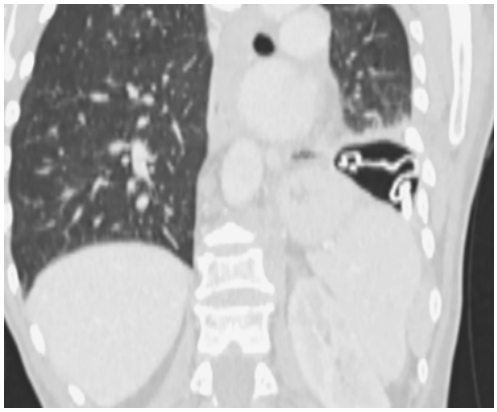

Figure 1. CT coronal image (lung window) showed a distorted high density patch and new gas under the left diaphragmatic reconstruction.

Figure 2

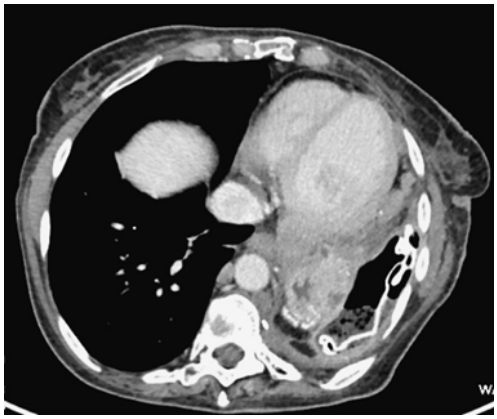

Figure 2. CT axial image (mediastinal window) revealed the distorted high density patch in a formation with an hydroaeral level in the left pulmonary basal area; the gastric herniation into the thoracic cavity is also visible.

Figure 3

Figure 3. Videofluoroscopic swallowing study: above the herniated gastric bottom, a radiolucent area was appreciated without signs of esophagopleural fistula.

REFERENCES

1. Berghmans, T., Durieux, V., Holbrechts, S., Jungels, C., Lafitte, J., Meert, A., . . . Girard, N. (2018). Systemic treatments for thymoma and thymic carcinoma: A systematic review. Lung Cancer,126, 25-31. doi:10.1016/ j.lungcan. 2018. 10.018
2. Wright, C. D. (2010). Extended Resections for Thymic Malignancies. Journal of Thoracic Oncology,5(10),S344-347. doi:10.1097/jto.0b013e3181f20eb3
3- Murphy, D. J., & Gill, R. R. (2017). Overview of treatment related complications in malignant pleural mesothelioma. Annals of Translational Medicine,5(11), 235-235. doi:10.21037/atm.2017.03.97
4- Martino, M. D., Sotiropoulos, G., & Waller, D. A. (2018). Complications following radical surgery for malignant pleural mesothelioma—prevention and management. Shanghai Chest,2, 56-56. doi:10.21037/shc.2018.07.02
5- Solli, P., Brandolini, J., Pardolesi, A., Nardini, M., Lacava, N., Parri, S. F., . . . Bertolaccini, L. (2018). Diaphragmatic and pericardial reconstruction after surgery for malignant pleural mesothelioma. Journal of Thoracic Disease,10(S2),S298-S303. doi:10.21037/jtd.2018.01.44
6- Groot, P. M., Truong, M. T., & Godoy, M. C. (2018). Postoperative Imaging and Complications in Resection of Lung Cancer. Seminars in Ultrasound, CT and MRI,39(3),289-296. doi:10.1053/j.sult.2018.02.008
7- Vlahu, T., & Vigneswaran, W. T. (2017). Pleurectomy and decortication. Annals of Translational Medicine,5(11),246-246. doi:10.21037/atm.2017.04.03