

Mediastinal Epidermoid Cyst in an Old Man with Recurrent Pneumonia: A Case Report

Alireza Omranzadeh¹, Seyed Morteza Hoseini Jebeli², Alireza Ghodsi¹, Masoud Mahdavi Rashed^{3*}

¹Medical student, Student Research Committee, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

²Resident of Radiology, Mashhad University of Medical Sciences, Mashhad, Iran

³Radiologist, Mashhad University of Medical Sciences, Mashhad, Iran

ARTICLE INFO

Article type:
Case report

Article history:
Received: 20 July 2020
Revised: 28 August 2020
Accepted: 15 Sept 2020

Keywords:
Epidermoid cyst
Mediastinum
Pneumonia

ABSTRACT

Mediastinal epidermoid cyst is a rare condition that is considered as a congenital disorder. Various manifestations from asymptomatic cases to serious symptoms may be found in these patients. However, some cases may be diagnosed incidentally. Here, we report an old man with recurrent pneumonia who demonstrated symptoms of respiratory distress and chest pain. The high resolution computed tomography (HRCT) and subsequent magnetic resonance imaging (MRI) showed a hypodense mass with internal calcification. CT-scan guided transthoracic needle biopsy confirmed diagnosis of mediastinal epidermoid cyst. The mass was resected through open surgery and patient's symptoms were subsided

► Please cite this paper as: Omranzadeh, A., Hoseini Jebeli, S., Ghodsi, A., Mahdavi Rashed, M. Mediastinal epidermoid cyst in an old man with recurrent pneumonia: A case report. *Journal of Cardio-Thoracic Medicine*, 2020; (3):666-669

Introduction

Benign cystic lesions of mediastinum are uncommon and account for about 12% to 18% of the primary mediastinal masses (1). Among the differential diagnosis of benign mediastinal cystic lesions, bronchogenic cyst, esophageal duplication cyst, pericardial cyst, and thymic cyst can be mentioned (2). These lesions are often asymptomatic and remain unknown until they are enlarged and lead to symptoms of compression on adjacent tissues (3). These lesions are generally detected as an incidental radiological finding (4). Here, we introduce a rare case of

anterior and middle mediastinal epidermoid cyst.

Case report

The patient was a 74-years-old man who referred to radiology department with respiratory distress, chest pain, and a history of recurrent pneumonia. In order to investigate the cause of recurrent pneumonia and his symptoms, non-contrast high resolution computed tomography (HRCT) of lung was performed. Computed tomography (CT) scan showed a large hypodense mass with approximate dimensions of 160×130×90 mm with internal calcification areas in the middle and

*Corresponding author: Mahdavi Rashed, Mashhad University of Medical Sciences, Mashhad, Iran. Tel& Fax: +985138453239

E-mail: mahdavirm@mums.ac.ir

© 2016 mums.ac.ir All rights reserved.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

anterior mediastinum adjacent to the heart and great vessels (Figure 1).



Figure 1. None contrast CT scan. A huge hypodense mass in middle and anterior mediastinum with foci of calcification.

The lesion caused atelectasis and degenerative changes in the middle part of the right lobe. For further assessment of the lesion, chest magnetic resonance imaging (MRI) was also conducted. In the DWI sequence of chest MRI and at B800, a hyperintense signal just similar to spinal cord was detected in the entire mass. In some areas, the mass had higher signal and more restriction than the spinal cord signal (Figure 2).

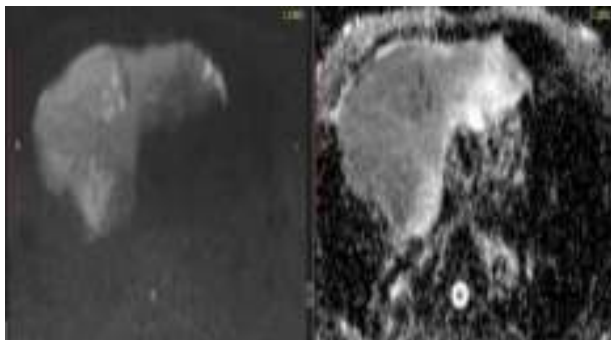


Figure 2. DWI and ADC map sequences show restricted mass in mediastinum

The observed regions of restriction had a correlation with the visible regions of ADC map. Restriction is one of the helpful features of epidermoid cyst. In the coronal view of T2-haste sequence, the lesion was clearly shown with a clear margin that had an intermediate to high signal intensity. CT-scan guided transthoracic needle biopsy was performed and due to the diagnosis of epidermoid cyst in the histopathologic

examination of the biopsy specimen, the patient underwent surgery. During the surgery the patient was positioned in left lateral decubitus and the thoracic wall was exposed through a posterolateral incision.

A cystic lesion with internal contents of cream-like material similar to creatine with soft consistency and dimensions of 10×8×3.5 cm was excised from the middle lobe of the right lung and mediastinum. The frozen section confirmed diagnosis of epidermoid cyst and thus the affected segment of the lung was repaired and decortication was conducted. After surgery, resected lesion was sent to a pathologic laboratory.

In microscopic examination, the cyst had a stratified and keratinized epithelium and the contents of cyst was diagnosed as lamellar keratinous materials (Figure 3). Finally, the evidences proved the diagnosis of an epidermoid cyst.



Figure 3. Pathology findings of the cystic lesion

Discussion

Generally, differential diagnoses of benign cystic masses of mediastinum include bronchogenic, thymic, pericardial, and esophageal duplication cysts (2). These cystic lesions account for 12% to 18% of mediastinal tumors. One of the differential diagnoses is epidermoid cyst that is a round, well-defined fluid containing mass (5). Many believe that epidermoid cysts result from the implantation of epidermal tissue through the surgery; however, the exact origin of mediastinal epidermoid cyst is not fully understood. It is believed that epidermoid cyst is a developmental disorder that results from ectodermal tissue entrapment within mediastinum (6).

This condition is very rare and can present itself as chest pain, cough, dyspnea, and dysphagia (5). Few reports have been published regarding mediastinal epidermoid cyst. Patel et al. reported a case of

epidermoid cyst in a 21 year old man who complained of right side chest pain. The Chest x-ray (CXR) showed an incidental mass (7). The CT scan showed a solid cystic lesion and the patient underwent tumor resection surgery. The pathology was consistent with epidermoid cyst. Similarly, Rodrigues et al. (8) reported a 52 years old woman with an incidental mass finding in CT scan. The MRI showed a heterogenous 3.56 cm mass that was located in the left side of the ascending aorta. In order to make a definite diagnosis, the mass was resected through open thoracic surgery. Pathology assessment was consistent with epidermoid cyst. Nalladaru et al. (9) reported another mediastinal mass in a 39-year-old woman that was found incidentally in a CXR. CT scan showed that it was a well-defined soft tissue mass in the anterior mediastinum. The CT guided biopsy showed no conclusive finding and thus the mass was excised through open surgery and the pathology reported an epidermoid cyst.

Another radiologic presentation of epidermoid cysts is effusion. Sameh et al. (10) reported a case with respiratory distress presentation, which was diagnosed as Left subpulmonic effusion in CXR and CT-scan which causes shifting of the heart and mediastinum to the right. Later on thoracotomy was done and epidermoid cysts was diagnosed by histopathologic examination of cyst. Furthermore, Sharma et al (10) reported another case in a 25-year-old man, who was presented with mediastinal mass and localized pericardial effusion. Later thoracotomy and histopathology assessment proved epidermoid cyst diagnosis.

In nearly almost all cases radiologic imaging was the trigger of diagnosis; however, the finding was unspecific and definite diagnosis should be made through histopathologic examinations. In CT scan, the epidermoid cyst appears as a well-margined non-enhancing liquid density mass and sometimes it has internal calcification (4). In our case, there was a liquid density and well-margined cystic mass in anterior and middle mediastinum. Generally, epidermoid cyst in MRI images is hypointense in T1 sequence, hyperintense in T2, and heterogeneous hyperintense in FLAIR sequence. In the DWI sequence, which is

very sensitive for detecting epidermoid cysts, hyperintensity is observed and in ADC images hypointensity is observed which have correlation with each other (11).

Thus, the strengths of our case is the presence of DWI sequences and ADC images that showed hyperintensity similar to spinal cord in B800 of DWI sequences in the all parts of the mass. The signal was higher than the spinal cord in some areas of the mass. These areas seem to have a correlation with ADC images.

However, the final diagnosis of the epidermoid cyst should be made by pathology assessment. In histopathologic examination, capsule of epidermoid cyst has thin, keratinized, and stratified squamous epithelium. Contents of the cyst include laminated keratinized material. Its keratinized epithelium can be used to distinguish epidermoid cyst from other mediastinal cystic lesions. Epidermoid cyst growth is very slow and non-neoplastic (12).

Conclusion

Mediastinal epidermoid cyst is a rare cystic lesion that can present itself with a variety of conditions from asymptomatic cases to even patients with respiratory distress or even sever chest pain. Imaging is usually non-specific; however, MRI DWI sequences and ADC images can be helpful. Still definite diagnosis should be made by pathology assessment.

References

1. Esme H, Eren S, Sezer M, Solak O. Primary mediastinal cysts: clinical evaluation and surgical results of 32 cases. *Tex Heart J*. 2011;38(4):371.
2. Kalhor N, Moran C. Benign Tumors and Tumor-Like Conditions. *Mediastinal Pathology*: Springer; 2019. p. 41-74.
3. Fernandes VLG, Pinto NMDG, Barreto O, Furtado J, Basuroy S. Epidermoid Cyst of the Auricle: A Common Cyst at a Rare Site. *Int J Otolaryngol Head Neck Surg*. 2018;7(6):344-9.
4. Duc VT, Thuy TTM, Bang HT, Vy TT. Imaging findings of three cases of large mediastinal mature cystic teratoma. *Radiol Case Rep*. 2020;15(7):1058-65.
5. Marchiori E, Hochhegger B, Zanetti G. Anterior mediastinal mass. *J Bras Pneumol*. 2018;44(1):3-

6. Sloan KA, Lakhoo K. Mediastinal Epidermoid Cyst in a 5-Year-Old Girl. *European j pediatr surg rep.* 2018;6(01):e24-e6.
7. Patel G, Lee S, Madedor O, Liu Y. Heart Attack or Tumor? A Case Report of Incidental Mediastinal Mass. *Arch Intern Med Res.* 2020;3:114-8.
8. Rodrigues C, Afonso A, Fragata J. Epidermoid Thymic Cyst-A Very Rare Mediastinal Mass. *Rev Port Cir Cardiorac Vasc.* 2019;26(4):267-8.
9. Nalladaru Z, Mbahi M, Wessels A. Epidermoid cyst—a rare mediastinal mass. *Indian J Surg.* 2015;77(1):19-20.
10. Sameh IS, Gewaeli NN, Hamza UA, ElSaid Awadalla MM. Epidermoid cyst radiologically mistaken as a left sided subpulmonic effusion. *Interact Cardiovasc Thorac Surg.* 2003;2(3):364-6.
11. Sharma N, Sharma A, Bajaj M. Case report: Epidermoid cyst misdiagnosed as a loculated pericardial effusion. *Indian j radiol imag.* 2008;18(4):319.
12. Madan R, Ratanaprasatporn L, Ratanaprasatporn L, Carter BW, Ackman JB. Cystic mediastinal masses and the role of MRI. *Clin Imag.* 2018;50:68-77.
13. Balasundaram P, Garg A, Prabhakar A, Joseph Devarajan LS, Gaikwad SB, Khanna G. Evolution of epidermoid cyst into dermoid cyst: Embryological explanation and radiological-pathological correlation. *Neuroradiol J.* 2019;32(2):92-7.