

90420_Auto_EditedC.docx

Name of Journal: *World Journal of Clinical Cases*

Manuscript NO: 90420

Manuscript Type: CASE REPORT

Multilocular thymic cysts is easily misdiagnosed as malignant tumor on computer tomography: A case report

Sun J *et al.* Easily misdiagnosed case report

Jun Sun, Qing-Ning Yang, Yi Guo, Ping Zeng, Long-Yan Ma, Ling-Wen Kong, Bo-Ying Zhao, Chuan-Ming Li

Abstract

BACKGROUND

Multilocular thymic cyst (MTC) is a rare mediastinal lesion, which is considered to occur in the process of acquired inflammatory. It is usually characterized by well-defined cystic density and filled with transparent liquid.

CASE SUMMARY

Here we reported a 39 years old male with a cystic-solid mass in the anterior mediastinum. Computer tomography (CT) imaging showed that the mass was irregular with unclear boundary. After injection of contrast agent, there was slight enhancement of stripes and nodules. According to CT findings, it was diagnosed as thymic cancer.

CONCLUSION

After surgery, MTC accompanied by bleeding and infection was confirmed by pathological examination. The main lesson of this case was that malignant thymic tumor and MTC of the anterior mediastinum sometimes exhibit similar CT findings. Caution is necessary in clinical work to avoid misdiagnosis.

Key Words: Multilocular thymic cyst; Computer tomography; Misdiagnosis; Hemorrhage; Infection; Case report

Sun J, Yang QN, Guo Y, Zeng P, Ma LY, Kong LW, Zhao BY, Li CM. Multilocular thymic cysts is easily misdiagnosed as malignant tumor on computer tomography: A case report. *World J Clin Cases* 2024; In press

Core Tip: Multilocular thymic cyst (MTC) is a rare mediastinal lesion, which is considered to occur in the process of acquired inflammatory. It is usually characterized by well-defined cystic density and filled with transparent liquid. Here we reported a 39 years old male with a cystic-solid mass in the anterior mediastinum. Computer tomography (CT) imaging showed that the mass was irregular with unclear boundary. After injection of contrast agent, there was slight enhancement of stripes and nodules. According to CT findings, it was diagnosed as thymic cancer. After surgery, MTC accompanied by bleeding and infection was confirmed by pathological examination.

INTRODUCTION

Thymic cysts account for about 1%-5% of all mediastinal masses^[1-3], mainly located in the anterior mediastinum, with a few cases located in the neck^[4]. Most of them are circular, elliptical, and irregular in shape, with or without separation. The clinical symptoms of thymic cysts depend on the location. If the surrounding tissues and organs of the cyst are compressed, breathing difficulties, coughing, thymic pain, and Horner's syndrome may occur. Most thymic cysts have cystic density, clear boundary and are easy to be diagnosed by medical imaging^[5-8]. Some thymic cysts are difficult to diagnose before surgery and can be misdiagnosed as thymoma based on their location and computer tomography (CT) findings. Here, we reported a case of multilocular thymic cyst (MTC) with hemorrhage and infection in a 39 years patient, which was misdiagnosed as **thymic carcinoma**.

CASE PRESENTATION

Chief complaints

A 39 years **old** man **came to our hospital with** the symptom **of fever**, headache **and** occasional palpitation.

History of present illness

The patient was with the symptom of fever, headache and occasional palpitation.

History of past illness

There was a history of hyperglycemia and no history of muscle weakness, joint pain, chest trauma or any surgery. Human immunodeficiency virus (HIV) was negative.

Laboratory examinations

The random blood glucose was 21.16 mmol/L. Laboratory tests showed that lactate dehydrogenase was 572 U/L, α -hydroxybutyrate dehydrogenase was 441 U/L and leukocyte count was $15.7 \times 10^9/L$. Electrocardiogram showed atrial fibrillation,

ventricular tachycardia, and elevated T-waves. All tumor markers were negative (Table 1).

Imaging examinations

After chest X-ray examination, a mediastinal mass was found (Figure 1). CT examination showed a mass in the anterior mediastinum, with a size of 5.6 cm × 11.3 cm × 10.2 cm. It had uneven density, showing a mixture of cystic density and solid density, with CT values ranging from 30 to 50 HU. Its shape was irregular and boundary was unclear. No calcification was observed. After contrast agent injection, slight enhancement of stripe and nodular shape were found. The mass was adjacent to the ascending aorta, superior vena cava, and left brachial vein. The boundary with the above structure was unclear, but the vascular lumen was not invaded. Bilateral pleural effusion was found (Figure 1). According to CT findings, it was diagnosed as thymic cancer.

FINAL DIAGNOSIS

This patient was finally diagnosed as acute myocarditis, acute upper respiratory tract infection, MTC with infection in the anterior mediastinum, and diabetes.

TREATMENT

Myocarditis was diagnosed based on the abnormal electrocardiogram, high level of lactate dehydrogenase and α -hydroxybutyrate dehydrogenase, and the clinical symptoms of fever and palpitations. After treatment with cefuroxime, fructose, sodium diphosphate, betaloc, insulin and acarbose, the lactate dehydrogenase and α -Hydroxybutyrate dehydrogenase level decreased and the leukocytes returned to normal. The mediastinal mass resection was performed 13 d after admission. The mass consisted cystic part and solid part, attached to adjacent tissues and surrounded the right brachiocephalic vein.

The mass consisted cystic part and solid part, attached to adjacent tissues and surrounded the right brachiocephalic vein. After surgery, histopathological examination

was performed. Squamous epithelium, cholesterol crystals, bleeding and reactive lymphoid hyperplasia with CD1 α (-), CD20 (partially positive), CD3 (partially positive), CD5 (partially positive), CD99 (+), CK (+), CK7 (partially positive), CK19 (+), CK5/6 (+), EMA (+), Ki-67 (5% +), p63 (+), CD117 (-) were found and MTC was diagnosed (Figure 2).

OUTCOME AND FOLLOW-UP

After treatment, all symptoms were improved and the patient was discharged successfully. The patient was tracked for nine months and no signs of recurrence was found.

DISCUSSION

According to the morphology, thymic cysts could be divided into two subtypes: monocular thymic cyst and MTC. Monocular thymic cysts are common, while MTC is rare. MTC is generally considered to be formed during inflammation and usually accompanied by immune deficiency diseases (such as HIV), autoimmune diseases (such as arthritis or Sjögren syndrome^[9,10]) or thymic trauma^[11]. Therefore, MTC is also called acquired thymic cyst. It is usually filled with transparent liquids, and sometimes may contain cloudy liquids or gelatinous substances due to bleeding. The main histologic features of MTC included the following: multiple cystic cavities, the wall of which was composed of fibrous wall, squamous epithelium, columnar epithelium or cubic epithelium; acute and chronic inflammation with fibrovascular proliferation; necrosis, hemorrhage, cholesterol granuloma and reactive lymphoproliferative^[9]. The pathological diagnostic criteria of the World Health Organization are the gold standard for diagnosing MTC. If MTC is small and asymptomatic, surgery is not necessary, which can protect patients from surgical trauma and reduce psychological stress. Imaging evaluation plays an important role in the diagnosis and treatment decision-making of MTC.

Most MTCs showed cystic density with separation, no enhancement, and no complicated with pleural effusion. The CT manifestation of this case was a mixed density

mass with cystic and solid components. After injection of contrast agent, there was slight enhancement of striped and nodular shape. It is very difficult to differentiate it from other mediastinal tumors, especially thymoma. According to the surgical and pathological results, the solid density was formed by bleeding, turbid liquid or colloidal material. The striped and nodular enhancement were caused by cyst wall, septum and reactive lymphoid hyperplasia. Previously, Jin *et al*^[12] has reported 13 cases of thymic cyst with solid density which were misdiagnosed as thymoma. Marvasti *et al*^[13] have reported five mediastinal cysts containing viscous liquid, which showed solid density on CT. The solid density in thymic cyst may be caused by bleeding, lymphoid tissue, viscous liquid containing high levels of protein and hyperplastic thymic tissue at different stages. The solid density has also been reported as cholesterol granuloma and calcification^[14-22] (Table 2). In this case, the boundary of the lesion was not clear, which was easy to be misdiagnosed as malignant tumor. Usually, unclear boundary was considered as invasive marker of malignant tumors. According to the histopathological results, there were bleeding, inflammation and reactive lymphoproliferation in this lesion. The unclear boundary might be caused by these factors, which also explains the significant increase of leukocytes. Pleural effusion is also a sign of malignant tumor, which misleads the diagnosis of this disease to a certain extent. Previously, there was no report of MTC complicated with pleural effusion. In this case, the bilateral pleural effusion may be caused by acute myocarditis. However, due to the lack of pleural fluid cytology results, the cause of pleural effusion was not clear.

CONCLUSION

Through this case, we found that MTC can have both cystic density and solid density simultaneously. Sometimes, due to combined inflammation, bleeding and other reasons, the edge may be unclear and pleural effusion may occur. In these conditions, it is easy to be misdiagnosed with malignant tumors. Full understanding of the special manifestations of the disease, combining with clinical and laboratory examination, is very important for accurate diagnosis.

5%

SIMILARITY INDEX

PRIMARY SOURCES

- 1

"Abstracts of Papers Submitted to the Joint 40th Anniversary Meeting of American Pancreatic Association and Japan Pancreas Society, November 4-7, 2009, Honolulu, Hawaii", *Pancreas*, 2009

16 words — 1%

Crossref
- 2

Yan-Shan Zhang, Yi-He Zhang, Xiao-Jun Li, Ting-Chao Hu, Wei-Zuo Chen, Xin Pan, Hong-Yu Chai, Yan-Cheng Ye. "Bystander effect and abscopal effect in recurrent thymic carcinoma treated with carbon-ion radiation therapy: A case report", *World Journal of Clinical Cases*, 2021

16 words — 1%

Crossref
- 3

[insights.ovid.com](https://www.insights.ovid.com)

12 words — 1%

Internet
- 4

www.frank.yolasite.com

12 words — 1%

Internet
- 5

"Clinical Vignettes", *The American Journal of Gastroenterology*, 10/2011

8 words — 1%

Crossref
- 6

Abebe Asele Mamo. "Socio-Economic Characterization of Community in Watershed Management: Case of Abaya- Chamo Sub-Basin Project Districts of Southern Ethiopia.", *Research Square Platform LLC*, 2022

8 words — 1%

Crossref Posted Content

EXCLUDE QUOTES OFF
EXCLUDE BIBLIOGRAPHY OFF

EXCLUDE SOURCES OFF
EXCLUDE MATCHES OFF