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ABOUT COVER

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The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

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Rare solitary splenic metastasis from a thymic carcinoma detected on fluorodeoxyglucose-positron emission tomography: A case report

Yueh-Hsun Tsai, Kuan-Hsun Lin, Tsai-Wang Huang

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Abstract

BACKGROUND

Thymic carcinoma is a rare, aggressive tumor arising from the thymus. In less than 7% of patients with thymic carcinoma, extrathoracic metastases occur in the extrathoracic lymph nodes, liver, and bone. Isolated splenic metastasis can occur but is very uncommon. To date, only 2 cases of splenic metastases from thymic carcinoma have been reported.

CASE SUMMARY

A 45-year-old man presented with chronic cough, dyspnea, persistent hoarseness and unintentional weight loss 17 kgs in 6 mo. Neck magnetic resonance imaging revealed a large, lobulated, soft-tissue mass measuring 5.4 cm × 6.6 cm × 3.8 cm which involved the left superior mediastinum and supraclavicular fossa. Chest computed tomography (CT) revealed a confluent and lobulated soft tissue mass encased the right brachiocephalic artery, right and left carotid arteries, and left subclavian artery in the mediastinum. A fluorodeoxyglucose-positron emission tomography was arranged for malignancy survey. The image revealed intense fluorodeoxyglucose avidity in a soft tissue lobulated mass occupying the superior mediastinum, over the cystic lesion in the spleen and in few enlarged nodules over the left supraclavicular fossa. CT-guided biopsy of the thymic mass and the ultrasound-guided biopsy of the splenic lesion were consistent with a thymic carcinoma with splenic metastasis. The patient was diagnosed of thymic carcinoma, cT2N2M1b, stage IVb.

CONCLUSION

A fluorodeoxyglucose (FDG)-positron emission tomography (PET) scan can provide a useful diagnostic value in conjunction with pathological result in

evaluating tumor staging. Our case emphasizes the utility of FDG-PET for metastasis detection in thymic carcinoma.

Key Words: Thymic carcinoma; Splenic metastasis; Positron emission tomography; Extrathoracic metastases; Mediastinal tumor; Case report

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Core Tip: Isolated splenic metastasis from thymic carcinoma is very rare. Nevertheless, splenic metastasis should be taken into consideration, although it is often asymptomatic. Our case emphasizes the utility of fluorodeoxyglucose-positron emission tomography for metastasis detection in thymic carcinoma.

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INTRODUCTION

Thymic carcinoma is a rare, aggressive tumor arising from the thymus. The anterosuperior mediastinum is where most thymic carcinomas are found. In less than 7% patients, extrathoracic metastases are present in extrathoracic lymph nodes, the liver, and bones[1]. Isolated splenic metastases are exceptionally rare. Patients with solitary splenic metastasis are often diagnosed without symptoms or raised tumor marker levels. This case study presents our experience with an unusual case of solitary splenic metastasis from a thymic carcinoma.

CASE PRESENTATION

Chief complaints

A 45-year-old man visited outpatient department presented with chronic cough, dyspnea and persistent hoarseness.

History of present illness

The patient started to have persistent cough with chest tightness since 10 mo ago. Unintentional weight loss for 17 kgs in 6 mo was also mentioned.

History of past illness

The patient denied any history of past illness.

Personal and family history

The patient denied any family history or allergic history to food or medicines.

Physical examination

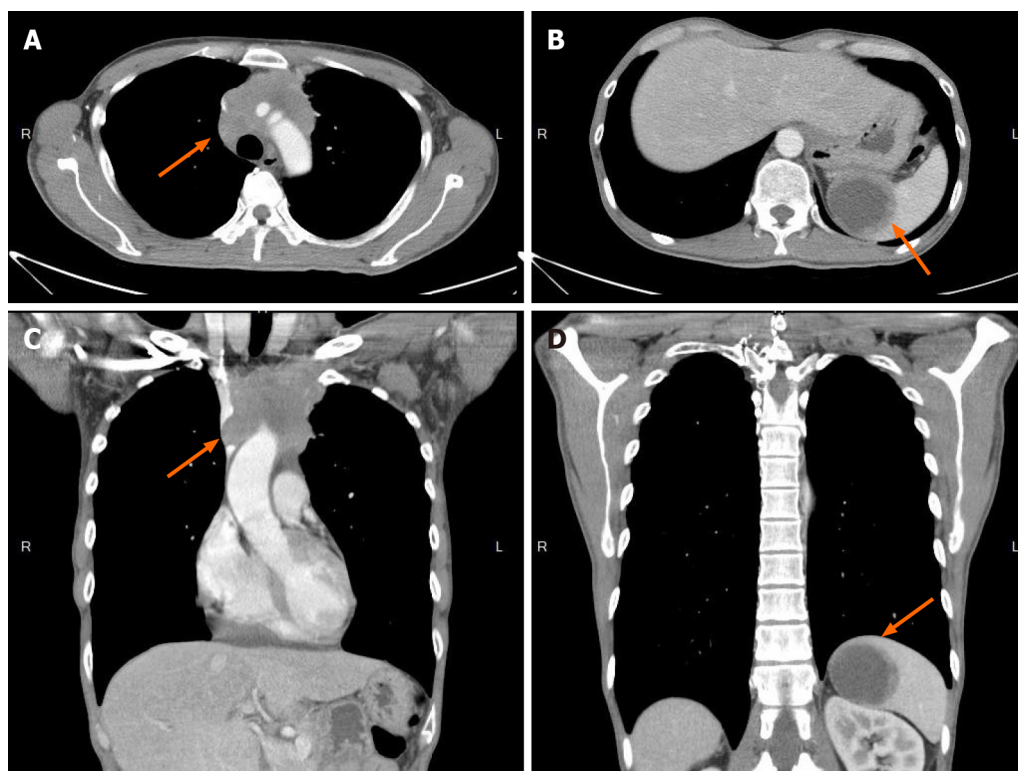
No specific finding on physical examinations was identified.

Laboratory examinations

Routine blood test results were unremarkable, with normal levels of carcinoembryonic antigen, carbohydrate antigen 19-9 and squamous cell carcinoma antigen.

Imaging examinations

The chest X-ray did not show any significant abnormalities. No significant abnormal findings on the abdominal sonography. Abdomen computed tomography (CT) discovered a 3.8 cm cystic lesion with mild irregular wall in the spleen was noted, which regular follow up was suggested. The patient was transferred to otorhinolaryngology department owing to persistent hoarseness and left shoulder pain. He underwent microlaryngeal surgery after left sided vocal cord palsy with a protruding lesion on the postcricoid region was revealed by stroboscopy. Neck magnetic resonance imaging (MRI) and bone scan were arranged after surgery. A large, lobulated, soft-tissue mass measuring 5.4 cm x 6.6 cm x 3.8 cm



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Figure 1 Computed tomography revealed mass over mediastinum and spleen. A and C: The mediastinum has a confluent and lobulated soft tissue mass (arrow), encasing the right brachiocephalic artery, right and left carotid arteries, and left subclavian artery and compressing the superior vena cava; B and D: There is one cystic mass (arrow), measuring approximately 5.1-cm in diameter, in the spleen.

which involved the left superior mediastinum and supraclavicular fossa was discovered accidentally on MRI. Chest CT ([Figure 1](#)) revealed a confluent and lobulated soft tissue mass encased the right brachiocephalic artery, right and left carotid arteries, and left subclavian artery in the mediastinum. With enlarged nodes (maximal size: 1.6 cm) in the left supraclavicular region. In addition, the chest CT scan disclosed a cystic mass in the spleen that increased from 3.8 cm to 5.1 cm in diameter in one month ([Figure 1](#)). A fluorodeoxyglucose (FDG)-positron emission tomography (PET) was arranged two months later for malignancy survey. The image revealed intense FDG-avidity in a soft tissue lobulated mass occupying the superior mediastinum (standard uptake value (SUV) max = 16.0, size > 9.0 cm), over the cystic lesion in the spleen (SUV max = 9.2, size = 6.1 cm) and in few enlarged nodules over the left supraclavicular fossa (SUV max. up to 17.5, size = 2.1 cm) ([Figure 2](#)).

Pathological examinations

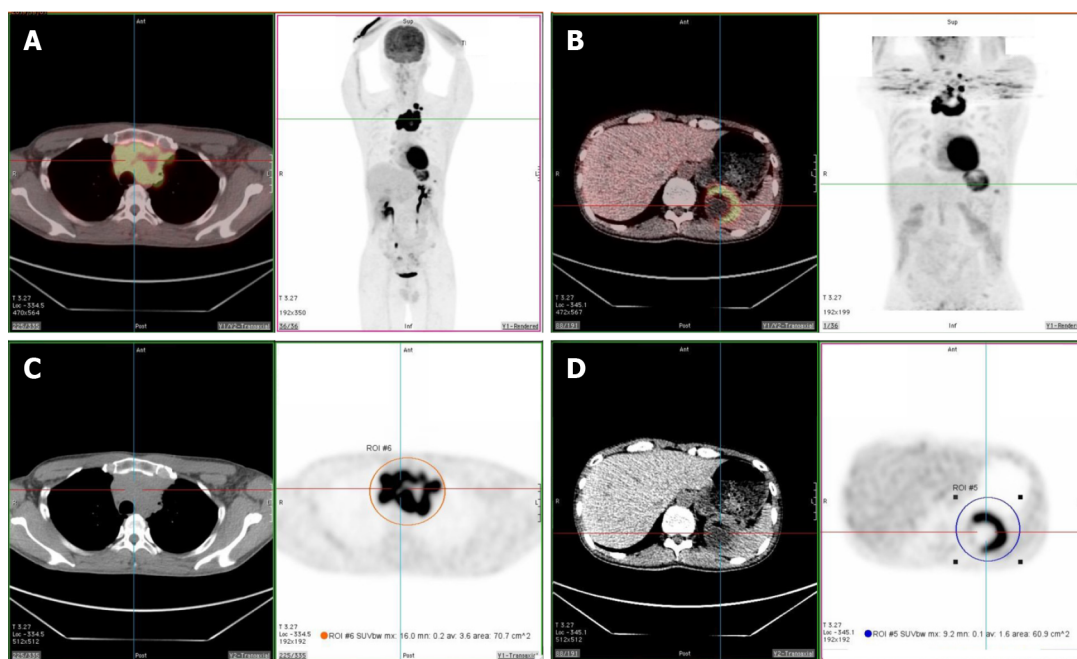
The pathology result of the postcricoid lesion was benign. The CT-guided biopsy of the thymic mass was positive for cluster of differentiation 5, negative for thyroid transcription factor-1. Microscopically, Hematoxylin-Eosin staining of the thymic mass showed polygonal and spindle shaped tumor cells accompanied by giant cells with bizarre and multilobulated nuclei, suggesting poorly differentiated carcinoma of the mediastinum ([Figure 3](#)). The ultrasound-guided biopsy of the splenic lesion was made, which was consistent with a metastasis from the thymic carcinoma ([Figure 3](#)).

FINAL DIAGNOSIS

A thymic malignancy with regional nodal and splenic metastases, cT2N2M1b was suggested by the results of the PET scan. Correlated to the pathology results of thymic and splenic lesion, the patient was diagnosed of thymic carcinoma, cT2N2M1b, stage IVb according to eighth edition of TNM staging system.

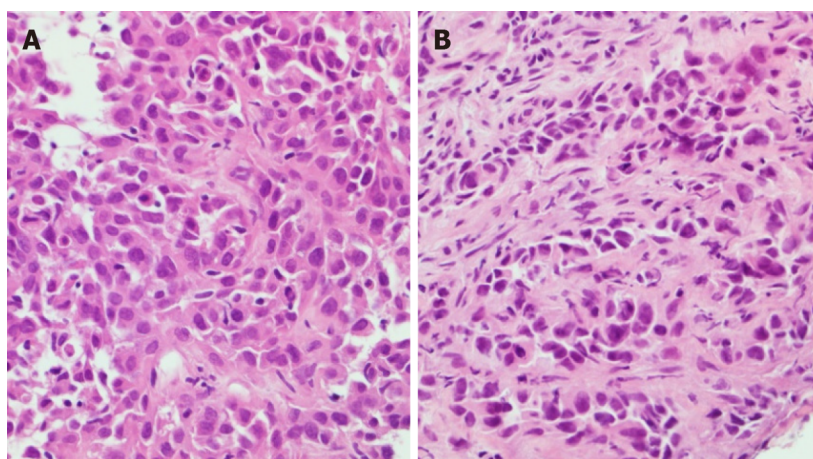
TREATMENT

The patient underwent biopsies of the thymic and splenic masses. Nevertheless, the patient refused to



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Figure 2 Fluorine-18 fluorodeoxyglucose positron emission tomography/computed tomography revealed increased fluorodeoxyglucose uptake over superior mediastinum and spleen. A and C: Intense fluorodeoxyglucose (FDG) avidity in a soft tissue lobulated mass occupying the superior mediastinum (SUVmax = 16.0, size > 9.0 cm); B and D: Intense FDG avidity over the cystic lesion in the spleen (SUVmax = 9.2, size = 6.1 cm).



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Figure 3 Pathology images. A: Hematoxylin-Eosin staining of the thymic mass showed polygonal and spindle shaped tumor cells accompanied by giant cells with bizarre and multilobulated nuclei; B: Hematoxylin-Eosin staining of the spleen tissue was compatible with poorly differentiated metastatic carcinoma.

take further treatment after the diagnosis of thymic carcinoma with solitary splenic metastasis was confirmed.

OUTCOME AND FOLLOW-UP

After two months of follow up at outpatient department. Unfortunately, we lost follow up of the patient after then.

DISCUSSION

Comparing with thymoma, thymic carcinoma is more aggressive. Survival rates for thymic carcinomas

vary depending on the stage (stages I-II: 91%; stages III-IV: 31%) and resectability[2]. Surgery is the gold standard treatment for early stage thymic carcinoma. Platinum-based chemotherapy is the standard choice for patients with locally invasive and metastatic disease[3]. It is important to evaluate staging thoroughly to make proper therapeutic plan.

Isolated splenic metastasis from a thymic carcinoma is very rare. To date, only 2 cases have been reported[4,5]. However, spleen biopsy was not performed in the case presented by Chen *et al*[5]. Extrathoracic metastasis could also be neglected by abdomen sonography, which was operator dependent in the first study[4]. In our study, pathological evidence and PET scan results completed a more definite diagnosis of thymic carcinoma with isolated splenic metastasis, cT2N2M1b, stage IVb.

CONCLUSION

It's extremely rare to find isolated splenic metastasis in a patient with thymic carcinoma. Nevertheless, splenic metastasis should be taken into consideration, while splenic metastases are often asymptomatic. To help determine the appropriate management for thymic carcinoma, FDG-PET scan is suggested. FDG-PET scan can provide a useful diagnostic value in conjunction with pathological result in evaluating tumor staging. Our case emphasizes the utility of FDG-PET for metastasis detection in thymic carcinoma.

FOOTNOTES

Author contributions: Tsai YH, Lin KH, and Huang TW were the patient's surgeons; Tsai YH reviewed the literature and contributed to manuscript drafting; Lin KH analyzed and interpreted the imaging findings; Lin KH and Huang TW were responsible for the revision of the manuscript for important intellectual content; all authors issued final approval for the version to be submitted.

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