

CASE REPORT

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A rare case of thymic carcinoma manifesting as a liver mass

Nathan Peterson, Erica Vormittag, Adil Sanaula

ABSTRACT

Introduction: Thymic carcinoma is a rare neoplasm of the thymus gland, also known as thymoma type C. Thymomas of all types usually present with masses in the mediastinum, with symptoms related to compression of local structures. Thymic carcinoma diagnosed by indentifying metastasis in the liver is very rare, with only one other case reported in literature. **Case Report:** Herein, we present a case of thymic carcinoma that originally presented with a very large liver metastasis in a 32-year-old male with abdominal pain and distention. He was found to have metastatic thymic carcinoma with a liver lesion 6.6x5.2 cm in diameter. **Conclusion:** This case is the first reported in literature of a thymic carcinoma presenting with liver lesions of this size. Further studies are necessary to evaluate effective treatments for this disorder. The case demonstrates that though rare, thymic

carcinoma should be considered when evaluating liver masses.

Keywords: Abdominal pain, Liver metastasis, Thymic carcinoma

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INTRODUCTION

Thymic carcinoma is a rare neoplasm that has no gender preference and often presents between 49 and 62 years of age [1]. Approximately half of patients are asymptomatic upon presentation, and the tumor is only an incidental finding on chest X-ray [1]. Of all thymic epithelial tumors, thymic carcinoma accounts for less than 4% of cases [2]. These tumors most commonly metastasize within the mediastinum and rarely are present elsewhere in the body. When the tumor metastasizes, it travels to the liver, central nervous system, and pelvis as documented in case reports from around the globe, all of which show poor prognosis in their patients [3]. Herein, we describe a case of thymic carcinoma presenting as a liver mass.

CASE REPORT

A 32-year-old male, with recent diagnosis of an unknown cancer, presented to the emergency department

with abdominal pain. The pain was localized to the upper abdomen, both left and right upper quadrants. The pain was described as stabbing in character though mild in severity. Along with the abdominal pain he described some bloating, gas and shortness of breath.

The patient's past medical history included admission to an outside facility two months prior for abdominal pain where he had been diagnosed with cancer, but the patient did not know what type. He had no other medical history, no previous surgeries, his only medication was an unknown pain medication he had taken since the previous hospitalization, and had no allergies. He also denied any family history of illness. The patient moved to the United States from Haiti six years prior to admission. He worked as a shelf stocker in a local grocery store and denied any tobacco, alcohol or illicit substance abuse.

On physical examination vital signs included a temperature of 98.1 degrees Fahrenheit, pulse 98 beats per minute, blood pressure 135/88 mmHg, respirations 18 breaths per minute, oxygen saturation 100% on room air. Pertinent physical findings included conjunctival pallor, a prominent manubrium with clear breath sounds throughout all lung fields, and heart sounds regular in rate and rhythm, without any murmurs, rubs or gallops. Abdominal exam showed no abdominal distention, with significant hepatomegaly; liver span was approximately six centimeters, with extension to the left upper abdomen as well. The liver was firm to palpation with significant tenderness, though the lower abdomen was soft, without any masses. The remainder of the abdomen had no tenderness, and no rebound tenderness.

White blood cell count was 11.6 k/UL, hemoglobin 11.7 g/dL, hematocrit 34.4%, platelet count 306 k/UL. Total protein 7.6 g/dL, albumin 4.1 g/dL, total bilirubin 1.2 mg/dL, direct bilirubin 0.1 mg/dL, ALT 77 units/L, AST 337 units/L, alkaline phosphatase 320 units/L, CEA 25.7 µg/mL, alpha fetoprotein level 4 ng/mL. Computed tomography scan of abdomen reported "Bilateral pulmonary nodules suspicious for metastatic disease, enlarged right pericardial lymph node. Large heterogeneous mass in the upper abdomen, which may be arising from the liver, although a lytic lesion could not be excluded. Additional focal lesion in the right lobe of the liver is identified. Malignancy is suspected. Extensive ascites." MRI scan of the abdomen with Eovist was obtained (Figure 1) and showed 24x23x12 cm heterogeneously enhancing mass replacing the left lobe of the liver suspected for hepatocellular carcinoma. Numerous hepatic and pulmonary metastases are present.

Upon admission, records from the outside hospital were requested. These revealed that along with finding the liver lesion as our team had; they had also done a CT of the chest showing an anterior mediastinal mass 6.6x5.2 cm with mediastinal and left hilar lymphadenopathy. Biopsy of the liver lesion was done at that time and it was diagnosed as metastatic thymic carcinoma, non-keratinizing squamous type with some neuroendocrine

expression. Based off his distant metastasis he was staged according to the Masaoka surgical staging system as a stage IV B [4].

Upon diagnosis during the previous admission, plans were made for outpatient treatment, which were delayed due to financial issues and never begun before the patient presented to our facility for abdominal pain as previously

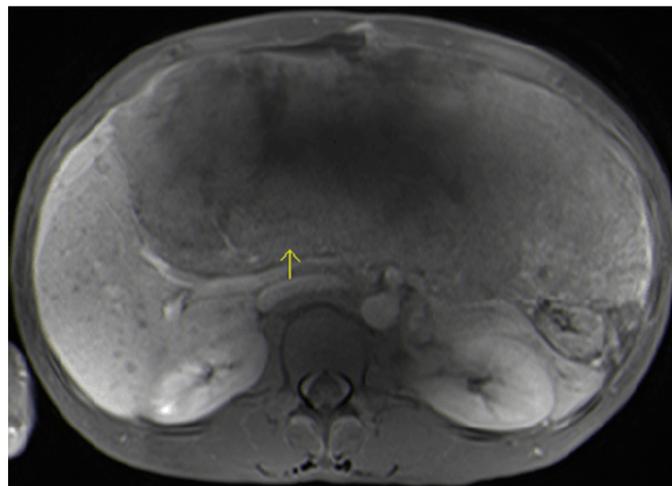


Figure 1: Magnetic resonance imaging scan of the abdomen with Eovist. MRI showing the liver mass measuring 24x23x12 cm, arrow pointing to the posterior surface of the mass. Eovist is a contrast agent specifically used to evaluate liver lesions found on other imaging studies.



Figure 2: Follow up computed tomography scan of the abdomen. This CT of the abdomen done two months later showing enlargement of the liver mass where it now occupied the majority of the abdominal cavity.

stated above. Outpatient arrangements were made with hematology/oncology for the patient to begin treatment and he was discharged for said treatment including chemotherapy.

The patient was able to follow-up with oncology and was begun on chemotherapy, specifically carboplatin and etoposide for two cycles. At that point the patient was readmitted and had a follow-up CT scan of the abdomen and chest (Figures 2 and 3), which showed worsening of his disease. The patient continued to deteriorate and succumbed to the disease six months after diagnosis.

DISCUSSION

According to the NCI, thymic carcinoma is “a thymic epithelial tumor that exhibits clear-cut cytologic atypia and histologic features no longer specific to the thymus (also known as type C thymoma) [3].” These make up between 1–4% of thymomas [4]. Thymic carcinoma is divided into low and high grade. Low grade includes “basaloid, mucoepidermoid and well-differentiated squamous cell types [5].” “High grade includes anaplastic, clear cell, poorly differentiated squamous cell, sarcomatoid, and small cell/neuroendocrine types [5].”

Incidence of thymoma is 0.13 per 100,000 people in the United States, and thymic carcinoma is 5% of all thymic neoplasms; it commonly presents in the 5th decade of life and a 2-year survival is 50% [3], 35% at 5 years and 28% at 10 years [5].

Thymic carcinoma is a much more aggressive disease than thymoma, with a much higher risk of metastasis. Many of the patients present with evidence of mediastinal invasion. Extrathoracic metastasis is also more common than thymoma, with the incidence unknown, but likely between 2–7% [6–8]. Lesions were most commonly found on the lung, liver, extrathoracic lymph nodes and bones. They were less commonly identified in the brain, adrenal glands and/or kidneys [6–8]. Most patients with extrathoracic metastasis had multiple sites, [8] which was the case in our patient.

Though no randomized controlled trials have been done to evaluate best treatment for thymic carcinoma [9], one literature review indicates that resection is the best treatment. If surgical resection is not possible due to metastasis or infiltration, it is recommended to undergo neoadjuvant chemotherapy or chemoradiation [4], as there is evidence that thymic carcinoma is radiosensitive [4]. Which radiation schedule and dose and best chemotherapy regimen are still under investigation, though most include cisplatin along with other agents. In cases of metastatic disease, no treatment has demonstrated a consistent response [4]. Targeted therapy to c-KIT with sunitinib by Strobel et al. showed partial response in 3 of 4 participants, with stable disease in the fourth, indicating some promise to tyrosine kinase inhibitors [10]. Other molecular targeted therapies have not shown promise in the studies conducted to date [4].



Figure 3: CT scan of the chest for follow-up. This CT done at the same time as Figure 2 shows the significant bilateral pulmonary metastases from his disease.

CONCLUSION

Thymic carcinoma is a rare but aggressive form of thymoma, which has shown a propensity to local infiltration and distant metastasis. It is difficult to treat and has a poor prognosis. This case is the first case reported in literature of a thymic carcinoma presenting with liver lesions of this size. Further studies are necessary to evaluate effective treatments for this disorder. The case demonstrates that though rare, thymic carcinoma should be considered when evaluating liver masses.

LIST OF ABBREVIATIONS

BUN- Blood urea nitrogen
 ALT- Alanine transaminase
 AST- Aspartate transaminase
 CEA- Carcinoembryonic antigen
 CT- computed tomography
 MRI- magnetic resonance image
 cm- centimeter
 NCI- National Cancer Institute

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Author Contributions

Nathan Peterson – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Erica Vormittag – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Adil Sanaualla – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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