

A “coughed up” tissue diagnosed as type A thymoma in an 80-year-old man

A case report

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Abstract

Rationale: Thymoma is the most common primary tumor in the anterior mediastinum. All major subtypes of thymoma can be clinically aggressive. However, type A thymoma is usually benign and rarely invasive, let alone invasive to the trachea. There are no published reports of thymoma diagnosed in a “coughed up” tissue”. Here, we report an 80-year-old man who coughed up a piece of tissue which was histopathologically diagnosed as type A thymoma.

Patient concerns: An 80-year-old man who had a history of thymoma for 8 years was admitted in our hospital with his severe cough and dyspnea and his “coughed up” something. He felt much better after coughing up the piece of tissue. He saved the tissue and sent it to the pathology department.

Diagnoses: The clinical diagnosis was lung cancer. But the final pathological diagnosis was type A thymoma.

Interventions: The patient refused to get chemotherapy, or surgery, and only would like to get the traditional Chinese medicine.

Outcomes: The patient is stable for 19 months after he coughed up some of the tumor tissue.

Lessons: The type A thymoma could be slowly aggressive. If left untreated, it would also invade into the trachea. When treat a patient with history of even a benign tumor, we should always bear the rare possibility in mind to avoid misdiagnosis. For an elderly patient, a “wait and see” policy may be acceptable.

Abbreviations: CgA = chromogranin, ck = Cytokeratin, CT = chest computed tomography, HE = Hematoxylin Eosin staining, MSA = Muscle Specific Actin, PAX8 = paired-box gene 8, Syn = synaptophysin, TdT = terminal deoxynucleotidyl transferase, TSQCC = thymic squamous cell carcinoma, TTF-1 = thyroid transcription factor 1, WHO = World Health Organization, WT-1 = Wilms tumor-1.

Keywords: case report, conservative treatment, coughed up, type A thymoma

1. Introduction

Thymoma is the most common primary tumor of the anterior mediastinum. All major subtypes of thymoma can behave in a clinically aggressive fashion.^[1] Although thymoma may be invasive, it is very rare to see their invasion of trachea.^[2] There is no report on a “cough up” tissue diagnosed as thymoma. Here, we report an 80-year-old man who admitted in our hospital with

his severe cough and dyspnea and his “coughed up” tissue which was pathologically diagnosed as thymoma. The patient has provided informed consent for publication of the case.

2. Patient information

In January 2017, an 80-year-old man was admitted in our hospital for a sudden hemoptysis of about 10ml. The chest computed tomography (CT) scan revealed an oval soft mass in the basal segment of the right upper lobe of his lung and in the substernal anterior mediastinal, the tumor had extended into the trachea (Fig. 1A). Radiologically, it was suspected as a lung cancer spreading to the mediastinum. However, due to the patient had 8 years of history of thymoma, the possibility of the thymoma invading the trachea cannot be ruled out although it is very rare. The patient had pleural effusion, restrictive pulmonary atelectasis, bilateral tiny lung nodules. The patient was accidentally found a “thymoma” in 2009 when he had the coronary stent implantation in an outside hospital. But the patient was reluctant to get neither the biopsy nor the surgery. It is recommended that he receive 12 radiation treatments (dose unknown) and be followed up closely every year. The tumor was relatively stable, but since the beginning of 2014, it had grown approximately 1 cm annually. So, the patient was diagnosed as lung cancer or invasive thymoma and pulmonary infection this time. The symptoms alleviated after he got the anti-inflammatory

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Informed written consent was obtained from the patient for publication of this case report and accompanying images.

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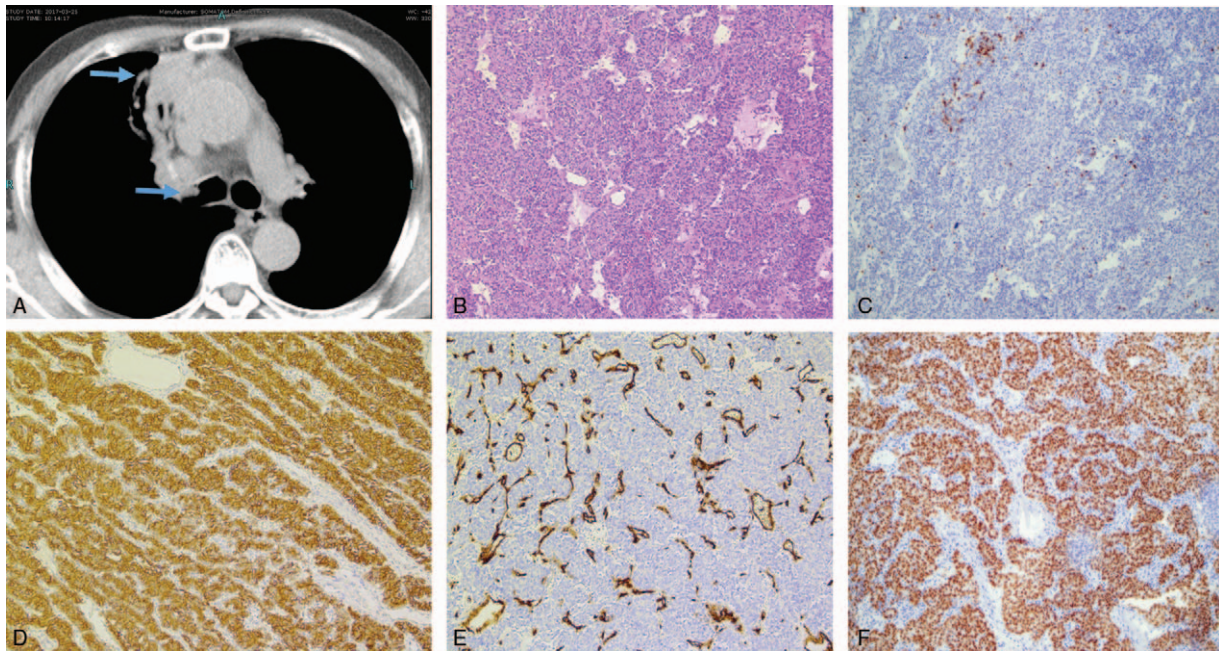


Figure 1. The chest CT scan (A) and the sections of the tumor (stained with hematoxylin and eosin and immunohistochemistry). CT scan (A) showed irregular soft tissue masses in the right anterior superior mediastinum and upper lobe of the right lung (the front arrow), invading the right main bronchus (the back arrow). The tumor cells were spindle, some were polygonal with bland chromatin. There was no obvious mitosis, very few scattered lymphocytes were identified (HE $\times 100$, B). Immunohistochemistry of CD5 ($\times 100$, C), pan-CK ($\times 100$, D), CD34 ($\times 100$, E), p63 ($\times 100$, F).

treatment and some traditional Chinese medicine. But 3 months later, the patient had the hemoptysis again for 1 week, and then in a night in April, he had severe cough and dyspnea, 3 minutes later, he coughed up a membrane-like tissue and his dyspnea relieved soon. The lesion was approximately $5 \times 3.5 \times 0.1$ cm, tan-white, soft membrane-like. Under the microscope, the tumor cells bland-looking spindle epithelial cells, rare mitosis with scant lymphocytic cells dispersed in it. Immunohistochemical staining: Muscle Specific Actin (MSA), calretinin, Wilms tumor-1 (WT-1), chromogranin (CgA), synaptophysin (Syn), vimentin, S100, thyroid transcription factor-1 (TTF1), Cytokeratin (ck)20, CD117, CD20 were all negative, Ki-67 was around 6%, Pan-ck, CK5/6, P63, ck19, paired-box gene 8 (PAX8) were strongly positive, CD31, CD34 were delicately stained the small vessels, and the CD5, CD3, terminal deoxynucleotidyl transferase (TdT) were very scant (Fig. 1B–F). The histopathological diagnosis was type A thymoma. The clinicians advised him to have an operation, but the patient rejected. He took some Chinese medicine regularly. Nineteen months later, the patients remained stable.

3. Discussion

Our patient had “coughed up” type A thymoma which had never been described in the literature. The patient had an 8-year history of thymoma and did not get the surgery except radiotherapy. His condition remained unchanged for nearly 5 years. However, the tumor had been growing slowly after 5 years, and eventually invaded the trachea and then been coughed up some of it.

The thymoma is the most common primary tumor of the anterior mediastinum and can behave in an aggressive fashion. Its subtypes are remain 4 in the 4th edition of World Health

Organization (WHO) classification which are type A, AB, B1–B3, and thymic squamous cell carcinoma (TSQCC).^[1] However, sometimes the subtypes are not easy to differentiate. The distinction between type A and AB thymoma is whether the content of immature T cells is less or more. Any lymphocyte-dense areas or $>10\%$ tumor areas with a moderate infiltrate of immature T cells should prompt classification as type AB thymoma. By definition, both type B1 and B2 thymomas are lymphocyte-rich tumors. The distinction of type B3 thymoma from TSQCC is also a challenge. However, in the 4th edition, it is now stated that tumors that look like type B3 thymoma on Hematoxylin Eosin (HE) staining should be diagnosed as type B3 thymoma, and tumors with TSQCC morphology should be labeled as TSQCC. The introduction of immunohistochemical features as criteria in diagnosis of thymomas with ambiguous histology is also proposed.^[3] Pfister et al found the angiogenesis status is different among the 4 WHO thymoma subtypes. They found type A than the type AB thymomas be characterized by a denser vasculature. The average vascular density in A thymoma was more than 4 times higher and the average vascular diameter was approximately three times smaller than in B3 thymomas.^[4] Our case reported here met the criteria mentioned above, so it was diagnosed as type A thymoma. However, in order to get the right diagnosis, other differential diagnosis should make at first which includes the fibroma, papilloma, or squamous cell carcinoma.

The patient we reported here did not receive surgery or chemotherapy but only 12 times of radiotherapy or traditional Chinese medicine since the onset of his disease. In the first few years, the situation was stable, but then there was a slowly progressive process with the tumor invading to the trachea. Then at 1 night, be coughed up some of the tumor. This is very rare and has never been reported.

In literature, there were around 20 cases of thymoma invading in the trachea and forming a polypoid mass reported. Hwang JT reported a 26-year old woman in 2012. She was treated by surgery, chemotherapy, and radiotherapy, then remained stable for over 1 year. However, the patient was misdiagnosed preoperatively due to difficulty of biopsy.^[2] The radiological imaging plays a very important role in the identification, characterization, and preoperative staging of thymic neoplasms, especially the CT scan remains the gold standard which would show an irregular line of demarcation indicating potential infiltration into the mediastinal pleura, the lung or mediastinal fat tissue. However, neither CT scan nor other radiological imaging methods allow reliable detection of early mediastinal or pleural tumor invasion.^[5] The chest CT scan of our patient showed irregular soft tissue masses in the right anterior superior mediastinum and upper lobe of the right lung, which invaded the right main bronchus backwards. The consideration were:

1. Thymic carcinoma
2. Lung cancer invading the thymus?

We could not make a definite diagnosis only depending on the radiological images. Our patient just got the final diagnosis after he coughed up the tissues and had it examined microscopically.

Systemic and local (hyperthermic intrathoracic chemotherapy) medical treatments together with extended surgical resections have increased the therapeutic options in patients with advanced or recurrent thymoma and thymic carcinoma.^[5] However, for the old patients, it is still lack of consensus with regard to their diagnosis and the proper treatments. The thymoma reported here seems to progress annually, but it seems not fatal. So maybe conservative approach for old patients is acceptable.

Our case report here strengths our understanding of type A thymoma behavior. The limitations are that we did not do

surgery so we could not provide better treatment suggestion for these types of patients.

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