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Thymic Abscess in a Geriatric Patient

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ABSTRACT

In the present study, a 63-year-old patient with no history of immunodeficiency was described. Accordingly, he referred to our center with fever, sweating, shaking chills, cough, and retrosternal chest pain that started three weeks ago. Pre-operative CT scan revealed a cystic mass with peripheral enhancement in the anterior mediastinum. The patient underwent open thoracic surgery and as a result, an infected thymic cyst was seen which was confirmed by performing pathologic examinations after resection.

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Introduction

A long list of diseases can cause prolonged fever, up to almost 30 percent of which are infectious (1). The most common sources of infection that may be found in the approach to systemic inflammatory response syndrome, are respiratory and urinary tract systems (2). However, sometimes we may find an unusual site of infection such as undiagnosed abscesses in the mediastinum in sepsis workups among geriatric patients that could mostly be resulted from cardiac surgery, esophageal perforation, or chest trauma (3). But, thymus gland can rarely be the origin of a mediastinal abscess, which may consequently cause prolonged fever (4-5).

The thymus gland normally degenerates after adolescence and what remains afterward is the islands of thymic cells surrounded by fatty tissue (6). Thymic cyst is a rare pathologic event, which is most likely to be found in children (7). Accordingly, there are just a few geriatric cases reported with a Thymic cyst (8). But an infected thymic cyst even is a rarer event to be found in adults with no history of immunodeficiency. In this article, we reported a case referred to our center due to prolonged fever and occasional shaking chills, as well as acute onset nonproductive coughs with chest pain, who was then admitted to the infectious department. Pre-operative investigations showed an anterior mediastinal mass in the chest CT scan. Surgical resection was planned

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and the pathologic studies revealed a thymic abscess.

Case Report

A 63-years-old man with a history of prolonged fever and sweating with shaking chills and acute onset nonproductive coughs that have begun three weeks ago was admitted to the infectious department. He had severe chest pain when coughing as well as a history of weight loss. He had brucellosis in his past medical history, but no history of ischemic heart disease was found. His chest physical examination was normal and showed no crackle or decrease in respiratory sounds.

At first, a chest X-ray was performed, showing a midline trachea and a normal cardiothoracic ratio along with no pathology in the pulmonary parenchyma.

The white blood cell count was 9300 and the differential blood cell count was calculated as 84 percent neutrophils. Moreover, the erythrocyte sedimentation rate of 61 and C - reactive protein of 139 were obtained. Additionally, U/A, U/C, and 24 hour's blood culture were normal. A troponin enzyme was checked in order to rule out cardiac causes of chest pain, which was less than 1.5ng/l, and the patient's electrocardiogram was normal as well. Based on his past medical history, Wright and 2-Mercaptoethanol tests were performed, the results of which were normal. By performing high resolution chest CT scan, a mass with liquid density was observed in the anterior mediastinum with stranding of surrounding fatty tissue, suggesting the Thymic cyst along with right pleural effusion and collapse of the adjacent pulmonary tissue. Of note, heart, mediastinum, and large vessels were normal and no lymphadenopathy was seen. So, we thought that it might be the source of patient's fever and then decided to evaluate it. Thereafter, a thoracentesis was performed, 3cc of semi-clear yellowish fluid was aspirated, and the analysis of pleural fluid showed WBC of 650 (including 70 percent neutrophil and 30 percent lymphocyte), RBC of 6250, lactate dehydrogenase of 774 U/lit, the total protein amount of 3700mg/dl, albumin of 3100mg/dl, and glucose of 74mg/dl while serum LDH level was 538 and the total protein was 6.31g/dl. In addition, pleural fluid culture showed no bacterial growth after 48 hours.

A transthoracic needle biopsy of the mediastinal mass was performed and a small amount of fluid content was drained, the result of which showed a viscous, turbid yellow to brown colored fluid with WBC of 55000 (including 80 percent neutrophils and 20 percent lymphocytes), RBC of 3200, LDH of 13404 U/lit, protein amount of 2800mg/dl, albumin 1700mg/dl, and sugar 7mg/dl. microbiologic examination for culture and antibiogram showed no bacterial growth after 48 hours. The cytopathologic examination's result indicated acute inflammatory fluid with polymorphonuclear predominance, but no sign of malignancy was found, which gave us no specific diagnosis. Considering the high concentration of the fluid, it was not possible for our radiologist colleagues to fully drainage the abscess and also we were not able to repeat the microbial examination so the patient underwent empirical therapy with broad spectrum antibiotics but the treatment failed and no clinical or laboratory improvement was achieved and patient's fever continued.

Therefore, a thoracic surgery consultation was requested and the patient was then transferred to thoracic surgery department. The patient underwent a high resolution chest CT scan with intravenous contrast that showed a cystic mass in anterior mediastinum with a size of 35×30mm, as well as peripheral enhancement and liquid density (Figure 1).

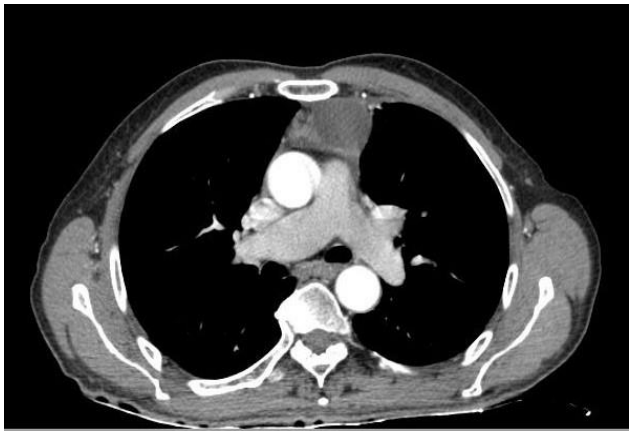

Figure 1. Chest CT scan with IV contrast "solid cystic mass in anterior mediastinun".

Subsequently, the patient underwent surgery and a 5cm abscess with supportive drainage was seen in the left inferior pole of thymus with severe inflammation and adherence to adjacent pulmonary and pericardial tissues. The sampling process of discharges and the total excision of remnants of thymus were performed and then sent to pathologists. The result was regressed thymic tissue with degenerative changes, calcification, bone formation, and abscess (Figures 2). There were no signs of teratoma, granuloma, or malignancy, suggestive of an infected thymic cyst.

Thymic tissue, focally with a cystic degeneration and the mixed inflammatory infiltrate

The patient was discharged from thoracic surgery department after five days under a good general condition and with no complications.

Discussion

Mediastinal masses may be incidentally found in chest radiography or present with some symptoms either due to the direct mass effect on adjacent mediastinal structures or due to systemic effects caused by the disease. The symptoms caused by Compression of mediastinal structures include cough, stridor, shortness of breath, dysphagia, chest pain, and other symptoms related to vascular involvement. Correspondingly, the systemic effects of this disease include fever and night sweats, and weight loss, which could be a reason for fever of unknown origin or can raise the suspicion of malignancy (9).

Anterior mediastinum is the most common site found for mediastinal masses, approximately 50 percent of which are originated from thymus gland, which includes a range of benign hyperplasia to malignant carcinomas (6). Of note, the Thymic cyst is known as a very rare cause of benign mediastinal masses that can be followed without any treatment, but if it causes a compressive effect on adjacent structures or if there is any doubt about the development of malignancy, it should be managed with resection (9).

Thymic cysts are not usually infected, but there are some cases reported with infected thymic cysts, half of whom were children aged between 4 months and 12 years old (4-5). Moreover, adult cases were aged between 39 and 75 years old, some with a history of immunodeficiency and taking immunosuppressive drugs as well as symptoms of pleuritic chest pain, shortness of breath, and prolonged fever; and in advanced cases, mediastinitis and septic shocks were observed. Some of these reports are discussed below.

Eytan Rubinstien and James Slavin in their study have reported a previously healthy 75-years-old woman with acute substernal chest pain who goes through the evaluation for acute coronary syndrome. However, after developing fever and local inflammatory signs along with the sternal margin, she was found to have bacteremia associated with thymic abscess and manubriosternal pyarthrosis (8).

As well, in another study, Jong-Chun Nah et al. have reported a 64-year-old woman with unremarkable medical history presented with acute onset pleuritic chest pain and a mildly increased serum CA-125 antigen who was diagnosed with rupture of thymic abscess into the pleural cavity (10).

Irene J. Lo et al. in their research have reported a 59-year-old man with shortness of breath and a significantly decreased exercise tolerance as well as intermittent fevers and leukocytosis, who was found to have a large anterior mediastinal mass, suggesting a diagnosis of thymoma infected with Non-typhoidal Salmonella (11).

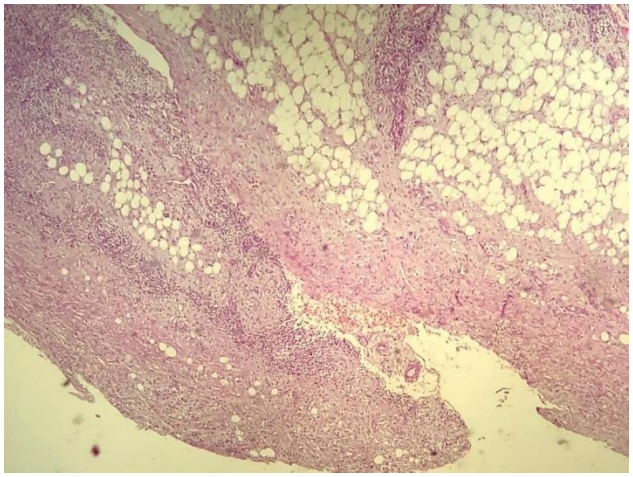

Figure 2. Thymic tissue, focally with cystic degeneration and mixed inflammatory infiltrate.

Osiri M. et al reported a 53-year-old woman who underwent the treatment for rheumatoid arthritis with a regimen consisting of methotrexate, sulfasalazine, leflunomide, and etanercept. She presented with pleuritic chest pain, nonproductive cough, fever, and chills. After performing the evaluations, they found out that she had developed a Staphylococcus aureus thymic abscesses (12).

However, this particular case in the present study had no history of any immunodeficiency or remarkable medical history and presented with fever, sweating, shaking chills, cough, and chest pain. So, thymic pathologies like thymic abscess should be considered as rare causes of fever, sweating, and retrosternal chest pain, even in old patients.

References

1. Bor DH. Approach to the adult with fever of unknown origin. UpToDate, Basow, DS (Ed), UpToDate, Waltham, MA. 2013.
2. Pomerantz WJ, Weiss SL, Torrey SB, Kaplan SL, Randolph AG, Wiley JF. Systemic inflammatory response syndrome (SIRS) and sepsis in children: Definitions, epidemiology, clinical manifestations, and diagnosis. Up To Date. 2015.
3. Sexton DJ, Barlett JG, Baron EL. Postoperative mediastinitis after cardiac surgery.
4. Teagarden A, Yuknis M, Rowan C. 1196: THYMIC ABSCESS DUE TO MSSA LEADING TO MEDIASTINITIS AND SEPTIC SHOCK IN A PEDIATRIC PATIENT. Critical Care Medicine. 2015 Dec 1;43(12):301.
5. Dayal D, Saini A, Sodhi K, Rao K, Gupta N, Dogra S, et al. Thymic Zygomycosis in a girl with poorly controlled diabetes. Acta Endocrinologica (Buc). 2011 Jul 1;7(3):379-83.
6. Brunicardi FC, SI S. Schwartz's principles of surgery. NewYork: McGrawHill. Health Publication Division. 2005:87-107.
7. Barrick B, O'Kell RT. Thymic cysts and remnant cervical thymus. Journal of Pediatric Surgery. 1969 Jun 1;4(3):355-8.
8. Rubinstien E, Slavin J. Thymic abscess with bacteremia and manubriosternal pyarthrosis in a geriatric patient. Chest. 1993 Mar 1;103(3):962-4.
9. Berry MF, Friedberg JS, Midthun DE, Vora SR. Approach to the adult patient with a mediastinal mass. UpToDate, Waltham, MA: Available at: https://www. uptodate. com/contents/approach-to- the- adult- patient- with- a- mediastinalmass [Accessed: April 22, 2017]. 2016.
10. Nah JC, Lee B, Kwak CH, Kim SB, Kim SM, Park SW, et al. Spontaneous rupture of idiopathic thymic abscess with a markedly increased CA-125 level. Internal Medicine. 2008;47(10):953-6.
11. Lo IJ, Aronow WS, Tantchou II, Lafaro R, Marav A, Muslim A, et al. Non-typhoidal Salmonella abscess in a patient with a large thymoma: a rare presentation and review of the literature. Archives of Medical Science: AMS. 2015 Apr 25;11(2):453.
12. Osiri M. Staphylococcus aureus thymic abscesses: case report. Reactions. 2007 Oct 20;1174:20.