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Case Report

Thymic lipofibroadenoma: A case report☆,☆☆

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ABSTRACT

Lipofibroadenoma (LFA) is an epithelial tumor. It has been seen rarely in the thymus, and only a handful of cases have been reported. LFA is usually seen in the anterior mediastinum and is defined as a coalescence of epithelial thymic, adipose, and fibrotic tissue. We present a 30-year-old female who presented due to an unrelated traffic accident. An incidental mass was found in her left anterior superior mediastinum. After performing a complete excision, a histologic examination of the excised mass revealed it to be LFA of the thymus, which is extremely rare. The follow-up period was uneventful. LFA is a slow-growing benign tumor and is very similar to fibroadenoma of the breast. The etiology and clinical findings are yet to be well-defined. It was only seen in men in the prior cases. But recent cases, including this one, have also reported female patients. The tumor is mainly observed in the anterior mediastinum, which was also the case in our patient. The gold standard of diagnosis is pathologic examination. Our examination showed strands and nests of thymic parenchyma, including Hassall corpuscles, which separated fibro adipose tissue. Thymectomy is the treatment of choice. It can be performed by either video-assisted thoracic surgery or open surgery. We performed open surgery. The most important prognostic factor for this tumor is staging.

Introduction

Lipofibroadenoma (LFA) is a thymic tumor classified as an epithelial tumor in the fifth edition of WHO classifications [1]. LFA is a slow-growing mass usually seen in the anterior mediastinum. Histologically LFA is described by the combination of thymic, adipose, and fibrotic tissue with the majority of adipose and thymic elements over the thin threads of thymic epithelial cells [2]. As mentioned above, LFA is a very scarce

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tumor, and few cases have been reported. There have not been well-established characteristic clinical features or radiological findings [3]. It is assumed to be a benign tumor that can be cured by complete resection [2]. In this report, we present a rare case of thymic lipofibroadenoma, which was at first suspected to be a thymoma due to radiological features in computed tomography (CT).

Case presentation

A 30-year-old female with no prior medical history was admitted to the hospital after being in a car accident. The patient was hemodynamically stable, and all lab experiments were normal, but she complained of thoracic vertebra tenderness. A CT scan was requested due to the patient's complaint, which accidentally revealed a large mass in the left anterior superior mediastinum. Chest CT showed an oval, vertically oriented well-defined homogenous mass lesion with a regular margin (diameter: 78*64*103 mm) at the left mediastinum in prevascular space extending down in front of the pericardium (Fig. 1), which had no calcifications and no involvement of nearby organs. She had no tumor-related symptoms and no other remarkable related comorbidities. CT-guided biopsy was performed, and the patient was admitted to the surgery ward for excision of the mass. The mass was suspected to be a thymoma, according to the biopsy report and radiological findings. Sternotomy and complete mass excision were performed under general anesthesia and in a supine position. The sample was sent to the laboratory, and the surprise came with the histopathology reports. Macroscopically the resected mass was an encapsulated, well-defined oval mass measuring 105*75*50 mm. The cut surface showed a solid appearance, gray-yellow, and hard in quality (Fig. 2A). Histologic examination revealed that the tumor resembled the fibroadenoma of the breast. Strands and nests of thymic parenchyma, including Hassall corpuscles, separated fibro adipose tissue (Figs. 2B–D). Therefore, the patient was diagnosed with LFA of the thymus. The patient's postsurgical course was uneventful, and in the follow-up period, no residual, or recurring lesions were noticed.

Discussion

Lipofibroadenoma is assumed as an unusual, slow-growing, benign thymic tumor that significantly resembles the fibroadenoma of the breast [2]. The etiology of thymic LFA is still not defined, and the clinical and pathological features are not clear yet [4]. Only a few cases have been reported so far. The clinical findings are shown in Table 1. There have been many common features between the reported cases. According to the reported cases, this tumor used to be seen only in men, but in our case and some recent cases, it has also been seen in women. Only 3 of the presented cases were associated with thymoma. Most patients were young, and the tumors were placed in the anterior mediastinum. However, they can also be seen in the neck, pleura, or lung [5]. The tumors were found as distinct solid and fatty masses. The mass effect refers to the tumor's impact on adjacent structures, potentially causing compression or displacement of surrounding tissues. Lipofibroadenoma typically has a low malignant potential and rarely invades nearby organs, such as the pleura, pericardium, and great vessels. Other distant metastases are extremely rare [9]. If there is a significant mass effect, immediate removal may be necessary to reduce pressure on vital structures, avoid further complications, and enhance overall lung function.

Complete removal is often recommended to reduce the chance of recurrence and manage any potential malignancy [9]. Surgical resection was performed for most patients, and all survived with no evidence of postsurgical recurrence. Since the number of reported cases is negligible, it is difficult to say whether these features are characteristic or not [5]. The presented case is a 30-year-old woman without any clinical findings. Similar to the abovementioned cases, the tumor was placed in the anterior mediastinum and found accidentally in radiological imaging. Pathological assessments confirmed the diagnosis. The gold standard of diagnosis for LFA is pathology. Classical histologic features of LFA are defined by thymic epithelial cells organized in the fibrous tissue background. Infiltration of the lymphocytes in the cracks and distribution of the fat cells also can be seen as individual or in crowds [4]. Pathological findings based on small calcifications in the tumor have been observed in the cases [6]. The differential

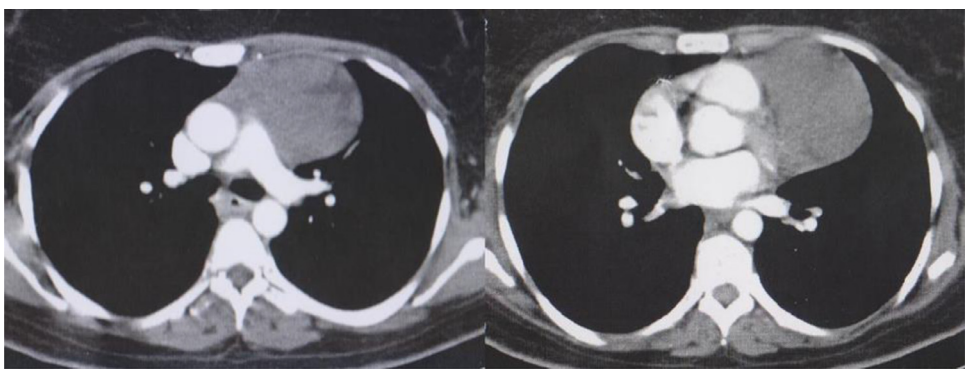

Fig. 1 – The axial contrast-enhanced CT scan of the chest reveals a well- defined anterior mediastinal mass in close proximity to the great vessels.

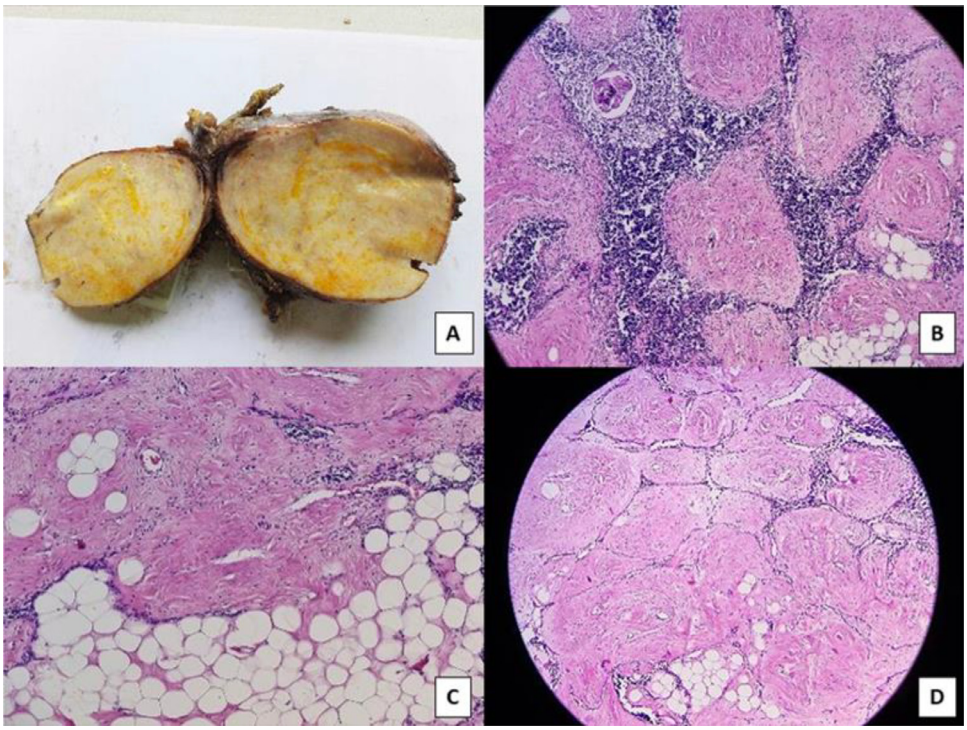

Fig. 2. (– A) Macroscapy of mediastinal mass with yellowish solid cut surface. (B–D) H&E stained sections of tumor reveal dense fibrosis and adipose tissue entrapped strands and nests of thymic parenchyma.

Table 1 – Previously reported cases of lipofibroadenoma of the thymus.

Author	Year	Age (y)	Sex	Site	Clinical presentation	Treatment	Size (cm)	Follow-up (Mo)/Status
Makdisi et al. [2]	2014	20	M	AM	cough, fever, night sweats	total resection	23.0×14.0×5.0	6/ANED
Hakiri et al. [3]	2020	28	M	AM	NO symptom	total resection	8.8×6.7×4.2	6/ANED
Qu et al. [4]	2013	21	M	AM	NO symptom	thymectomy	10×6×4	46/ANED
Bolca et al. [5]	2021	64	F	AM	dyspnea	total resection	16×8×6	48/ANED
Hui et al. [6]	2018	29	M	AM	cough, expectoration	Thoracoscopic excision of the mass	5.4×2.4×6.5	NA/ANED
Kuo et al. [15]	2001	62	M	AM	Dyspnea, dizziness	thymectomy	NA	80/ANED
Onuki et al. [11]	2009	32	M	AM	NO	thymectomy	NO	NA
Kurebayashi et al. [16]	2020	55	F	AM	NO symptoms	total resection	4.5×1.8×1.3	NA

Abbreviations: AM, anterior mediastinum; ANED, alive with no evidence of disease; F, female; M, male; NA, not available.

diagnosis of the masses that contain fat is extensive. It includes lipoma, omental herniation, thymolipoma, liposarcoma, mediastinal lipomatosis, and teratoma [2]. Initially, differential diagnosis of the LFA divides into thymolipoma and fibroadenoma. Thymolipoma is an uncommon type of thymoma that could cause severe conditions like myasthenia gravis and autoimmune disorders. Epithelial and fibrous parts cannot be seen by microscope in thymolipoma, which is the crucial point in distinguishing it from LFA.

Furthermore, biomarkers like c-Jun, CD57, Casp9, p73, and N-ras can also be helpful in differential diagnosis [4]. We performed a pathology examination on the tissue obtained by biopsy. Our examination demonstrated strands and nests of thymic parenchyma, including Hassall corpuscles, which separated fibro adipose tissue. Radiology can also help in the differential diagnosis. For example, we can observe low signals on T1- and T2-weighted magnetic resonance (MR) images for lipofibroadenoma, but mediastinal teratomas usually show high signals on both T1- and T2-weighted MR images [3,7,8]. Thymectomy is the best-recommended treatment. It is safe, and the recurrence is less than 10%. Video-assisted thoracic surgery and open surgery are 2 surgical methods used in this matter. For tumors with larger dimensions, open surgery will be needed [2]. We operated open surgery due to the large size

of the lesion. The most important prognostic factor is staging. Other factors, such as age, gender, and immunodeficiency, are not critical prognostic factors [9–14].

Author contributions

Both A.K. and E.A. wrote the initial draft of the manuscript. AM.N, G.A., S.H., A.K., and E.A. reviewed and participated in the final version of the manuscript. All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the study to take public responsibility for the content. Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in Radiology Case Reports.

Data availability statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

Patient consent

The authors have obtained written informed consent from the patient to publish his case (including the publication of images).

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