Case Report

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A Rare Case Of Thymus Lipofibroadenoma

AV Shilov, AM Avdalyan, AS Shargin, NV Boriskin, AV Levitsky and DN Protsenko

Moscow State Budgetary Institution of Health Care "Moscow Multidisciplinary Clinical Center "Kommunarka" of the Department of Health of the City of Moscow", 8/3, Sosensky Stan street, Kommunarka, 108814. Moscow State University of Medicine and Dentistry named after A.I. Evdokimov, 20/1, Delegatskaya street, Moscow, 127473. The Russian National Research Medical University named after N.I. Pirogov, 1, Ostrovityanova street, Moscow, 117997. Peoples' Friendship University of Russia, 6, Miklukho-Maklaya street, Moscow, 117198

Corresponding author:
Avdalyan Ashot,
Moscow State Budgetary Institution of Health Care "Moscow Multidisciplinary Clinical Center "Kommunarka" of the Department of Health of the City of Moscow", 8/3, Sosensky Stan street, Kommunarka, 108814. Moscow State University of Medicine and Dentistry named after A.I. Evdokimov, 20/1, Delegatskaya street, Moscow, 127473. The Russian National Research Medical University named after N.I. Pirogov, 1, Ostrovityanova street, Moscow, 117997. Peoples' Friendship University of Russia, 6, Miklukho-Maklaya street, Moscow, 117198,
Email : ashot_avdalyan@mail.ru

Author contributions:
AM Avdalyan, AS Shargin, AV Shilov, AV Levitsky, DN Protsenko, All the author are equally contributed to this work.

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1. Abstract

A rare case of lipofibroadenoma (LFA) localized in the left pleural cavity and emanating from the anterior mediastinum with partial compression of the lower lobe of the left lung in a 59-year-old man is described here. The tumor was detected during a routine medical examination using radiation research methods. Left-sided thoracotomy was performed with complete excision of the tumor and anterior mediastenal lymph dissection. The tumor was represented by mature adipocytes of various sizes, among which the remains of the thymus with Hassall's corpuscles, a small number of lymphocytes, areas of calcification were determined. Areas of fibrous stroma prevailed over narrow strands of anastomosing epithelial cells with transparent nuclei. In places, epithelial cells formed slit-like structures infiltrated by lymphocytes, resembling the structure of breast fibroadenoma. By immunohistochemistry epithelial cells were positive for Pan Keratin and CK19, lymphocytes were positive for CD3 and CD20, thymic cells expressed TdT.

2. Keywords:
pathological anatomy, oncology, thymus, fibroadenoma

3. Introduction

Thymus tumors are extremely rare among common human diseases and pathological conditions. It is well known that identification of the organ specificity of such tumors is extremely difficult and a prerequisite is similarity of the histological structure of tumor and thymus (the presence of Hassall's corpuscles, etc.). It is particularly difficult to verify a tumor with complex histogenesis and when its occurrence and development was influenced by different tissue sources, include lipofibroadenoma. These include lipofibroadenoma, presented to the readers.

There are data on only 6 cases of this type of tumor in the fifth review of mediastinal tumors [1]. All of them were diagnosed exclusively in men aged from 20 to 62 years. In some cases, this type of tumor was associated with type B1 thymoma, and the prognosis was determined not by lipofibroadenoma, but by thymoma [2]. The tumor was most often localized in the anterior mediastinum and was clinically manifested by shortness of breath, dizziness, and sometimes erythrocyte aplasia. In some cases, there were no clinical symptoms at all, and the tumor was diagnosed during a physical examination [3].
Here is our observation of this type tumor in a 59-year-old man.

4. Clinical Observation

During a routine medical examination of a 59-year-old patient N., FLG (chest X-ray) revealed a density in the left pleural cavity. Further CT scan of the chest (computed tomography) revealed a volumetric formation in the same place, containing a tissue of predominantly adipose density, inhomogeneous structure, with enlarged soft tissue areas (dirty fat sign) measuring 25x15x20 cm. The tumor was located entirely in the lower sections of the left pleural cavity with the dome of the diaphragm pushed downwards, the lung upwards with the formation of compression atelectasis of the segments of the basal pyramid of the lower lobe. However the mediastinal organs were visualized clearly and were not displaced. Clinical and laboratory studies did not reveal any abnormalities. Under endotracheal anaesthesia, a lateral thoracotomy was performed in the sixth intercostal space on the left. In the left pleural cavity there was found a massive soft-elastic tumor in a capsule, with a long pedicle, originating from the tissue of the anterior superior mediastinum at the level of the aortic arch. There were no signs of tumor invasion into the vessels of the mediastinum; there was no infiltration of the mediastinal cellular tissue. The lesion was absolutely mobile in the pleural cavity; it was removed in the capsule, without resection of the lung and diaphragm, with excision of the tissue of the anterior upper mediastinum, bilateral cervical horns of the thymus; by skeletonizing of the left brachiocephalic vein, ascending aorta. Macroscopically the tumor had an ovoid shape, 28x25x12 cm in size

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with a smooth, nitid surface covered with a translucent thin capsule no more than 0.1 cm thick. On series-produced sections, the tumor tissue was represented by soft elastic yellow lobular adipose tissue with whitish fibrous layers, single blood vessels without hemorrhages and necrosis foci (Fig. 1a, 1b). The lesion had a vascular pedicle 2 cm long on one side.

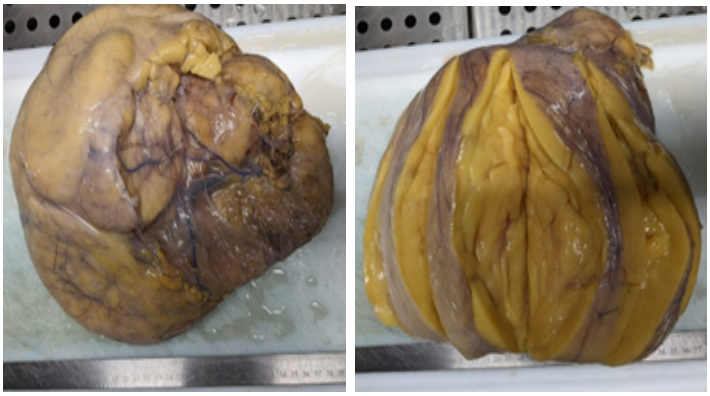


Fig. 1 (a-b)

Under the microscopic examination, the tumor was represented by mature adipocytes of various sizes, among which the remnants of the thymus with Hassall's corpuscles, a small number of lymphocytes, and calcifications were determined (Fig. 2a, 2b).

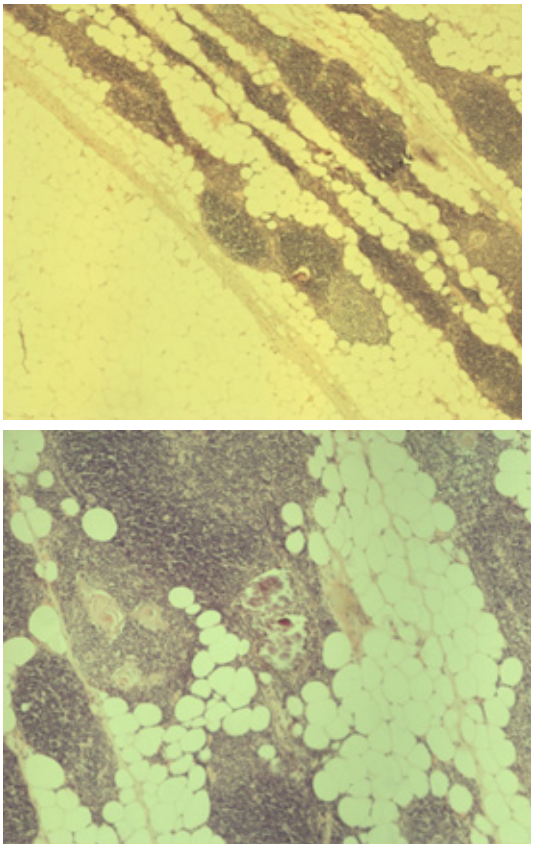


Fig. 2 (a-b)

Areas of fibrous stroma predominated over narrow cords of anastomosing epithelial cells with transparent nuclei. In some places, epitheliocytes formed slit-like structures infiltrated with lymphocytes, resembling the structure of breast fibroadenoma (Fig. 2c, 2d).

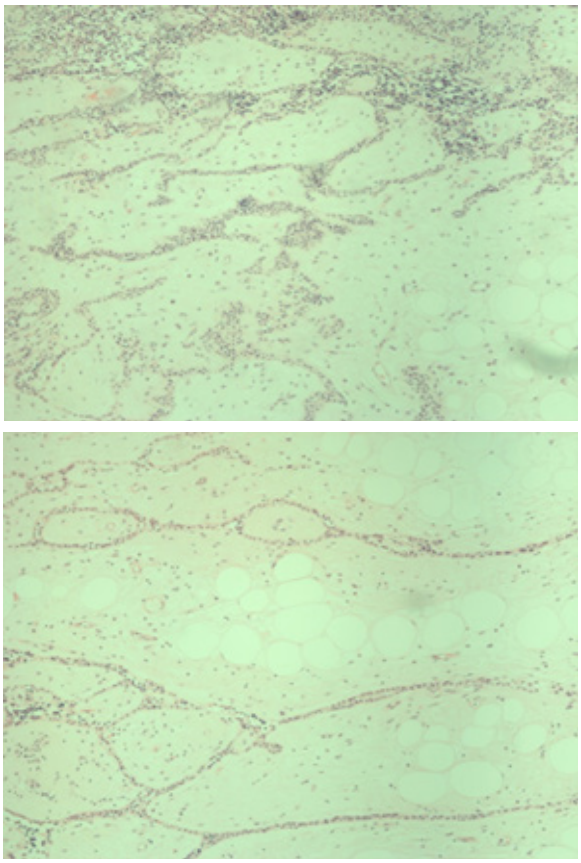
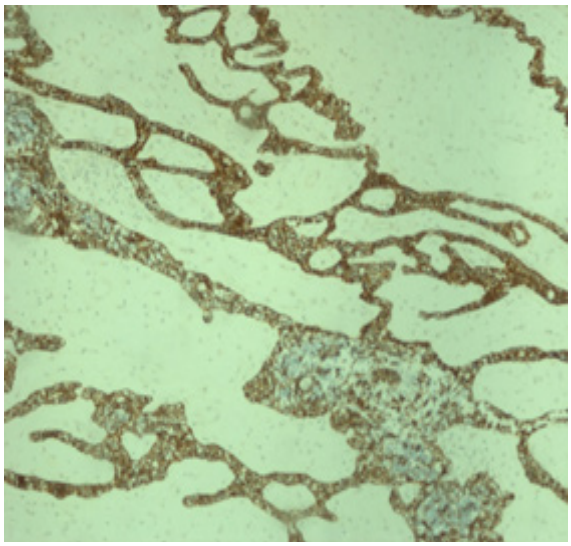


Fig. 2 (c-d)

In an immunohistochemical study, epithelial cells were positive for Pan Keratin and CK19, and lymphocytes were positive for CD3 and CD20; thymic cells expressed TdT (3a, 3b, 3c, 3d, 3e).



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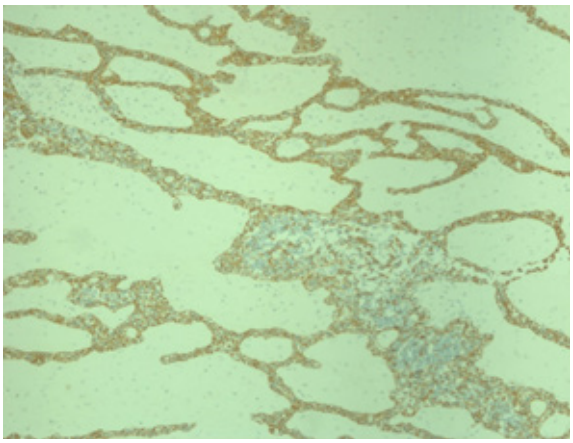
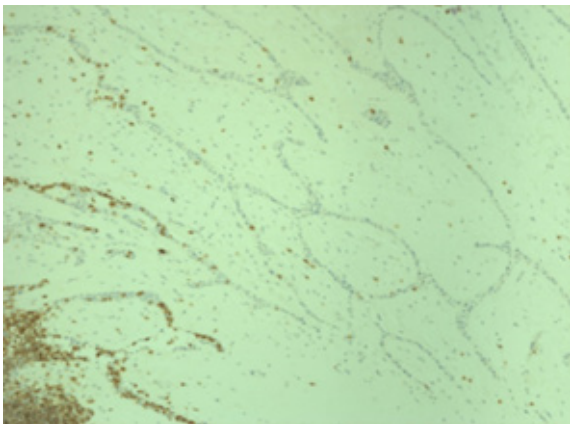


Fig. 3 (a-b)



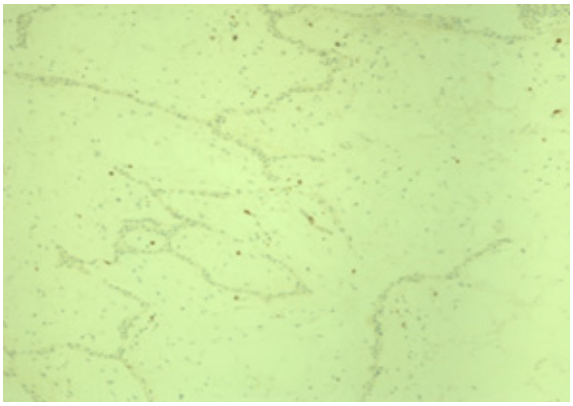


Fig. 3 (c-d)

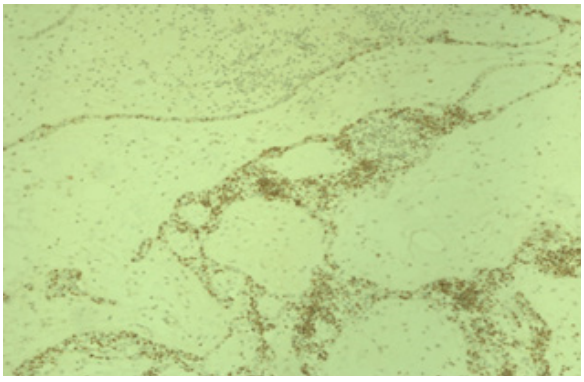


Fig. 3 (e)

5. Conclusion

In the diagnosis of the described lesion, the algorithm for its identification implied a detailed examination of the clinical picture of this tumor. However, this neoplasm was clinically asymptomatic, in contrast with previously published observations, in most of which the tumor was associated with erythrocyte aplasia. The following features attracted our attention: the age of the patient (59 years old), localization of the tumor in the anterior mediastinum, tumor's significant size, the participation in the formation of the tumor of components originating from various tissue sources and, finally, the persistence of the thymus tissue.

The next step of the algorithm provided for the identification of the cellular components of the tumor. If adipocytes did not need special identification, then epithelial cells were positive for pan Keratin, CK19, and lymphocytes were detected using an immunohistochemical reaction for CD3 and CD20, and thymus remnants were detected using TdT, which was the basis for verifying the diagnosis of LFA. Attention was drawn to the peculiar location of slit-like epithelial cells among the fibrous stroma, which, in the absence of adipocytes and the thymus component, helped in the differential diagnosis between LFA and thymolipoma, often accompanied by the development of myasthenia gravis and autoimmune dysfunction [3] against the background of true thymus hyperplasia [4]. An important feature, in contrast to LFA, was the absence of epithelial and fibrous components in the thymolipoma, as well as the identification of specific biomarkers CD57, c-Jun, p73, Casp9 and N-ras [5,6].

Thus, the above observation, on the one hand, confirms the opinion that LFA is a rare and benign tumor of the thymus gland. On the other hand, LFA is not always associated with erythrocyte aplasia and any type of thymoma. In order to successfully diagnose and differentiate between thymolipoma, fibroadenoma and LFA, histological features and immunohistochemical characteristics of the tumor tissue should be taken into account.

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