Unusual cause of large intrathoracic mass in a young male of Bangladesh: A case report of giant intrathoracic lipoma & literature review

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**ABSTRACT**

**INTRODUCTION:** Lipoma in the thoracic cavity is very rare, unlike any subcutaneous lipoma, and can often grow very large without showing any symptoms.

CASE: We report a 42-year-old man having giant intrathoracic lipoma which was found incidentally during routine checkup and the first documented case of the such type in Bangladesh. This benign tumor occupied almost the entire left hemithorax, and it was resected successfully by thoracotomy. The postoperative period was uneventful except for prolonged chest drain. Histological analysis confirmed intrathoracic lipoma.

**DISCUSSION:** Usually, patients with intrathoracic lipoma are asymptomatic. But since lipomas can grow to a large size, they may cause symptoms due to the compression effect. Lipoma should be considered a differential diagnosis of asymptomatic large intrathoracic mass, and imaging is the best method for initial identification.

**CONCLUSION:** As intrathoracic lipoma typically grows very slowly over years without any symptoms and signs, late diagnosis is common. Complete surgical extirpation is needed to prevent further recurrence.

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1. Introduction

Lipomas are ubiquitous benign mesenchymal tumours that originate from mature adipose tissue. Though lipoma is a common entity, intrathoracic lipoma is not found frequently. A giant intrathoracic lipoma is even rarer [1]. It has been previously reported that intrathoracic lipomas may arise from the mediastinum, diaphragm, bronchus, lung, or thoracic wall [2]. Most intrathoracic lipomas are asymptomatic, especially when the size is small. Large lipoma within the chest cavity can show symptoms, but they may be incidentally discovered at a routine medical examination [3]. We report a case of massive intrathoracic lipoma in a young adult weighing about 3.2 kg, which was removed successfully by thoracotomy at our academic hospital. A review of similar cases in the literature was also made.

2. Case report

A 42-year-old Bangladeshi male (Fig. 1A) visited outpatient clinic of our academic hospital with occasional shortness of breath on exertion for approximately one month without having any chest pain, cough, hemoptysis, weight loss and any remarkable past medical history. The patient denied any relevant drug and family history also. He was a normotensive, non-alcoholic, non-smoker and having a body weight of 50 kg for his 163 cm height. Physical examination of the patient revealed absent breath sounds along with dullness on percussion over the left chest. Routine blood work up was within standard limit.

A routine chest X-ray (Fig. 1B) was performed, which showed a large homogenous mass occupying two-third of the left chest. CECT (Contrast Enhanced Computed Tomography) of chest (Fig. 1C, D) revealed large, homogenous, fat density mass (~97 Hounsfield units, or HU) occupied most of the left chest cavity sparing the apical region with retrosternal herniation to the anterior mediastinum and small portion of right chest with contralateral shift of heart and mediastinal structures. The post-contrast scan showed a few patchy enhancements of the mass. The right lung was also normal except an extent of passive compression. CT guided FNAC was done, and smear showed polymorph, lymphocytes, and fragments of fatty tissue on the background of blood, that is consistent with lipoma.

Left mini thoracotomy was performed through six intercostal space to remove the tumor. Thoracotomy revealed a round, yellowish, smooth, soft, capsulated huge mass (Fig. 1E) occupying lower two-thirds of the right thoracic cavity. The left lung was compressed by the lesion but not adherent to it. The tumor was free from the surrounding structures, except a dense adhesion was found.
along the mediastinal surface involving part of the pericardium & hilum. A small portion of the lesion was extending retrosternally to anterior mediastinum and opposite thoracic cavity. The entire mass was successfully removed by several pieces (Fig. 1F). The resected tumor weighted about 3117 gm with a size of about 25 cm x 21 cm x 28 cm. It was lobulated and cut section comprises of yellow lobulated fatty tissue. Final histologic examination confirmed capsulated lipoma with no evidence sarcomatous change.

Postoperative period was uneventful except for prolonged chest tube drainage for the three weeks. Prolonged drainage was not associated with any other complications, and the draining fluid was serous all the time. The patient was discharged without any complications on 28th postoperative day. After a one-year follow-up, he had no recurrence.

3. Discussion

Lipomas are benign neoplasm composed of mature fat cells and can be found in any part of the body. According to the location, lipomas are divided into two types (i.e., superficial or subcutaneous
and deep-seated lipomas), and the subcutaneous or superficial variety is the most commonly involved sites [2]. Though intrathoracic lipomas are rare; it can be found in mediastinal, diaphragmatic, bronchial, and pulmonary levels [4]. They can extend into pleural, subpleural, or extrapleural spaces [2]. The first case of intrathoracic lipoma was reported by Fothergill in 1783 [2,5].

George Huer classifies intrathoracic lipoma into three groups: a) dumbbell tumors, having intrathoracic and extrathoracic portion connected by an isthmus, b) anterior superior mediastinal lipoma presenting at the roof of the neck, c) tumors lying completely within the thoracic cavity [6]. According to this classification, our case belongs to the group that lies completely within the thoracic cavity.

According to Tateishi et al., the intrathoracic lipoma may be related to obesity [7]. But Sukurai et al. showed in a case series, three out of ten patients were obese with BMI>25 kg/m². He also reported that most lipomas become apparent in patients at 40–60 years of age without any gender predilection, and most of them are young males with average built [2]. Lipomas often grow very slowly and eventually are detected at a relatively later period of life [4,8]. But according to Christop’s opinion, such development is not slow often and therefore, close follow up is mandatory once intrathoracic lipoma is detected [9].

Most patients with intrathoracic lipoma stay asymptomatic; however, since lipomas can develop to an enormous size, they can encite pressure effects, which depend on locations and sizes of lipomas. Symptoms like dyspnoea and dysphagia might be due to local compression on adjacent structures, for example, the trachea or oesophagus [4]. Our patient’s occasional complaint of mild shortness of breath might be due to the tumor’s compression on the left lung. Intrathoracic lipoma can also compress other internal structures including heart, leading to serious consequences like heart failure [10]. The may also cause other complications such as intratumoral haemorrhage with pain and fever; besides, they can invade intercostal spaces and induce rib lysis [11].

Although the tumor is usually detected incidentally in a chest X-ray, CT scans and magnetic resonance imaging (MRI) scans are the most helpful imaging techniques in the diagnosis of intrathoracic lipomas [8,11]. Chest CT permits a definitive diagnosis when it demonstrates a homogeneous fat attenuation mass (−50 to −150 HU) that usually forms obtuse angles with the chest wall and displace adjacent pulmonary parenchyma and vessels [11]. The density may not be entirely uniform because lipomas frequently contain fibrous stroma alongside several areas of dystrophic ring-type calcifications within a field of scattered dense soft tissue components [12]. High signal intensities on both T1- and T2-weighted images on MRI are the main characteristics of intrathoracic lipoma [13]. But radiographs cannot be used invariably to differentiate between lipomas and well-differentiated liposarcoma. We performed preoperative FNAC that showed features of lipoma, which is not always necessary.

Intrathoracic lipomas are mostly benign in nature. To prevent future recurrences, complete en-bloc resection of lipoma, whenever possible, is the definitive treatment option. We accomplished a rare complete removal of about 25 cm × 21 cm × 8 cm large intrathoracic lipoma. However, we couldn’t extirpate the whole lipoma as a single mass as it was huge, and the capsule was broken.

Surgical resection can easily be carried out through muscle sparing or a standard open thoracotomy or mini-thoracotomy, as in our case. Video assisted thorascoscopic surgery (VATS) has been mentioned in literature as a technique for thoracic tumor which is usually pedunculated and small enough in size and having no infiltrating growth. VATS is an effective, well-tolerated surgical procedure having less morbidity and mortality. Successful removal of a pleural lipoma using uniportal VATS technique has been reported recently [14].

The outcome after resection of lipomas is usually good. Once resected, local recurrence of intrathoracic or mediastinal lipomas is uncommon. However, they may recur locally, and the rate of recurrence after an excision has been reported to be under 5% in the literature [2]. On the other hand, deep-seated lipomas appear to show a greater tendency to recur may be due to the incomplete surgical removal [2,13]. We found several recurrences in the literature after complete surgical resection, whereas several cases were reported where the tumor stopped growing after incomplete surgical resection [2,15].

If the residual tumor remains stable in size during the postoperative course, the lesion may be treated by vigilant observation, or it can be re-excised without causing any functional disability.

4. Conclusion

Intrathoracic lipomas are rare benign tumor in contrast to subcutaneous lipoma, which is very common. They typically grow very slowly over the years without any symptoms and signs and are often found in routine investigations incidentally when they become large. CT and MRI are usually diagnostic. Intrathoracic lipoma should be considered as a differential diagnosis when a large mass is identified incidentally in the thoracic cavity. Albeit pleural lipoma never advances towards liposarcoma, careful surgical resection is yet vital and must be resected completely to prevent further recurrence.

Declaration of Competing Interest

No conflicts of interest.

Funding

No sources of funding.

Ethical approval

Ethical approval was taken from National Institute of Diseases of the Chest & Hospital, Dhaka, Bangladesh.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Anwarul Anam Kibria (AAK) was the chief of the unit, treating this patient and carried out the patient diagnosis and supervised the report writing. Abdur Rahim (AR) performed the surgical procedure. S M Tajdid Rahman (TRT) contributed to regular follow-up of the patient, data collection from the preoperative, intraoperative, and postoperative periods and in drafting the case report. TRT completed proofreading and gave it a final form. All authors were involved in the final reviewing and approving the final manuscript.

Registration of research studies

1. Name of the registry: Not Applicable.
2. Unique identifying number or registration ID: Not Applicable.
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): Not Applicable.
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Provenance and peer review

Not commissioned, externally peer-reviewed.

Acknowledgement

The authors wish to thank the patient who kindly gave consent for the case to be presented in this manuscript. We would also like to send our vote of the thanks to the entire Department of Thoracic Surgery, National Institute of Diseases of the Chest & Hospital, Dhaka, Bangladesh.

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