

Oat Cell Carcinoma Lung Presenting as Chest Wall Swelling

Manish Wadhwa¹, Joanna J. Ekabua², Aisha O. Adigun², Gaurav Singla³

1. Surgery, Maharishi Markandeshwar Medical College and Hospital, Solan, IND 2. Infectious Disease, University of Louisville School of Medicine, Louisville, USA 3. Radiology, Maharishi Markandeshwar Medical College and Hospital, Solan, IND

Corresponding author: Gaurav Singla, gaurav.singla311@gmail.com

Abstract

Chest wall swelling originating from lung is an uncommon phenomenon that makes its diagnosis a challenging task. We present a case where an 82-year-old man, a lifetime smoker, presented with a chest swelling. The origin of the swelling was an extension of a peripherally located lung malignancy diagnosed with the help of contrast-enhanced CT chest and confirmed as oat(or anaplastic) cell carcinoma on histology. After complete workup it was diagnosed as metastatic small cell carcinoma lung. Patient was managed with palliative chemoradiotherapy.

Categories: General Surgery, Oncology, Pulmonology

Keywords: small-cell lung carcinoma, oat cell carcinoma lung, chest wall swelling, cigarette smoking, distant metastasis, palliative care, surgical oncology

Introduction

Chest wall swellings may not always arise from the constituents of chest wall but sometimes they result from the extension of contents of underlying viscera. Chest wall swelling with underlying lung involvement is a rare finding. Detailed history and careful physical examination along with a high index of suspicion is required to know the origin of such swellings. Chest wall invasion in patients already diagnosed with non-small cell lung carcinoma (NSCLC) is not an uncommon finding but small cell carcinoma lung (SCLC) presenting as chest wall swelling is a very rare phenomenon. In this article, we report a patient who presented in surgery outpatient clinic with chest wall swelling later on diagnosed to be a case of advanced small cell carcinoma lung (SCLC).

Case Presentation

An 82-year-old male, farmer by occupation, presented with painful swelling in the left side of chest for last eight months. Swelling started spontaneously and progressively increased in size. During the last eight months, patient had an on and off mild cough, four to five episodes of hemoptysis and also complained about loosening of clothes. He had no other significant past medical and family history. He was a heavy smoker who smoked one to two packs of 'bidi' (a type of cheap cigarette containing unprocessed tobacco wrapped in a leaf) for 50 years. He was being treated symptomatically at local primary health care centre but his symptoms did not improve and reported to our hospital for further management after eight months of symptoms onset. On examination, 8 cm x 6 cm, non-pulsatile swelling present over the left 3rd to 6th intercostal space. Swelling was tender, hard in consistency, had well-defined margins, fixed to skin and underlying structures, had ulcerated surface along with necrotic patches. Ipsilateral supraclavicular lymph nodes were enlarged (approx 4 cm x 3 cm), hard in consistency, fixed and had a smooth surface with regular margins. There were no other swellings in any other part of the body. His review of systems was unremarkable. Routine hemogram was within normal limits. ESR was not elevated and Montoux test was negative. Sputum for acid-fast bacilli was negative on Zeihl-Neelsen staining. Chest X-ray postero-anterior view revealed large left lung mass with the probable invasion of chest wall and pleura without any bony involvement (Figure 1). An ill-defined lesion was also reported on the right side in X-ray chest PA view. However, no lesion was found on the right side chest on the CECT chest.

Review began 08/14/2021

Review ended 08/20/2021

Published 08/27/2021

© Copyright 2021

Wadhwa et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

How to cite this article

Wadhwa M, Ekabua J J, Adigun A O, et al. (August 27, 2021) Oat Cell Carcinoma Lung Presenting as Chest Wall Swelling. Cureus 13(8): e17499. DOI 10.7759/cureus.17499

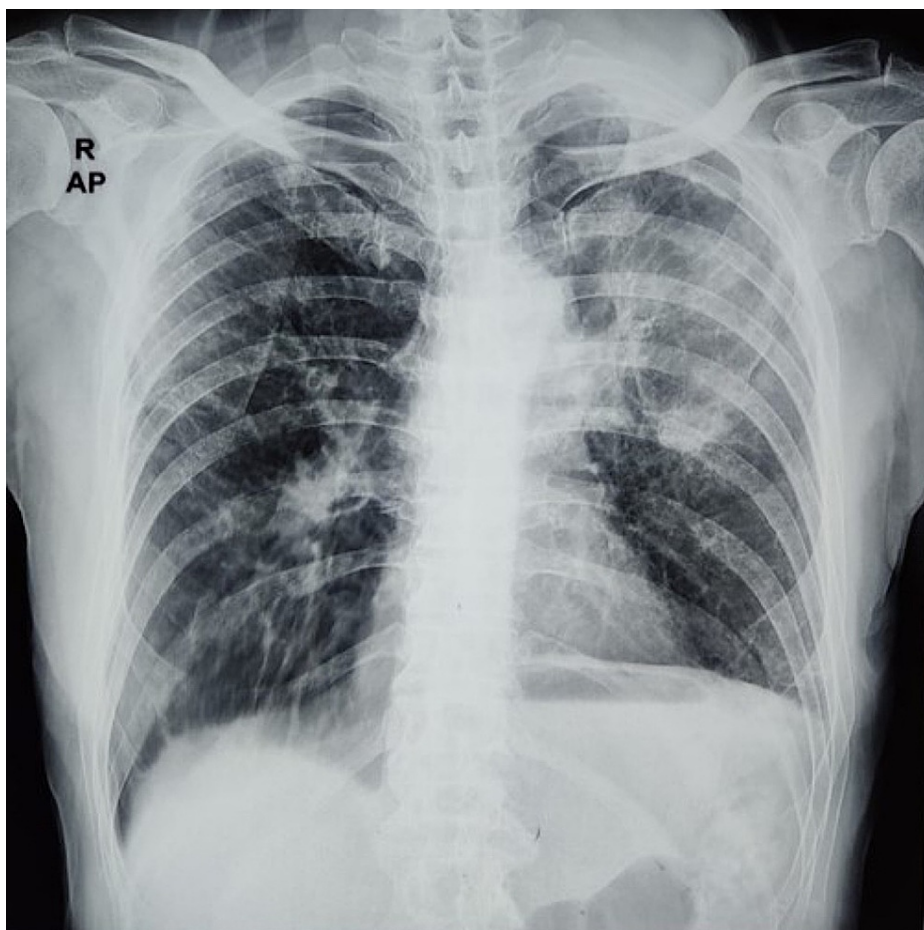


FIGURE 1: Chest X-ray postero-anterior view suggestive of a large opacity on the left side chest.

CECT Thorax detected ill-defined peripheral heterogenous mass anterior segment of the left upper lobe with chest wall invasion (without any bony involvement) likely s/o peripheral lung malignancy (Figure 2).

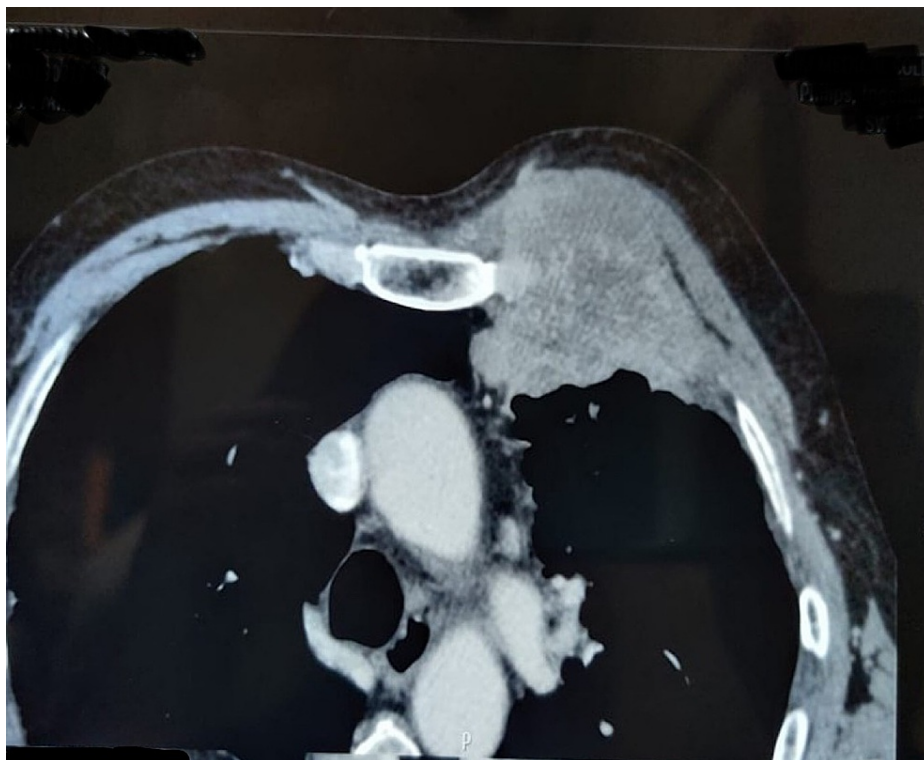


FIGURE 2: CECT chest showing chest wall infiltration by an ill-defined mass arising from left lung parenchyma.

CECT: contrast-enhanced CT.

Histopathological examination of percutaneous biopsy from chest wall swelling and neck swelling confirmed the diagnosis as small cell (anaplastic or oat cell) lung carcinoma (SCLC) (Figure 3) with metastasis to ipsilateral cervical lymph nodes. After confirmation of diagnosis, metastatic workup was done with CT scan of abdomen and pelvis and MRI brain.

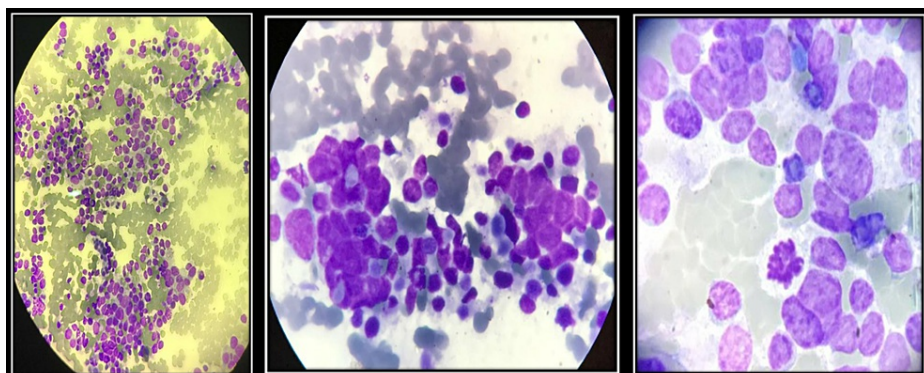


FIGURE 3: Microscopic features of small cell carcinoma lung showing clusters of small and round cells with scarce cytoplasm.

CT scan of abdomen and pelvis revealed a nodular mass with radiological features similar to a metastatic lesion in left adrenal gland but MRI brain was unremarkable. Patient received cisplatin and etoposide and was planned for subsequent palliative radiotherapy.

Discussion

Chest wall swellings can arise from the skeletal or soft tissue structures of the thorax. Pulmonary and mediastinal neoplasms are common but seldom present initially as thoracic wall swelling [1]. The thoracic wall is considered to be involved when direct extension of a malignant pulmonary tumor is beyond the

parietal pleura into any part of thoracic cage is microscopically confirmed [2]. Benign swellings like lipomas, chronic inflammatory granulomas and malignant swellings like sarcomas of chest wall, mediastinal and pleural neoplasms, and bronchogenic carcinoma invading chest wall should be kept in differential diagnosis. Chest wall swelling with underlying lung involvement is an uncommon presentation and initial presentation of small cell carcinoma lung as chest wall swelling is a very rare event and no such case was found with a similar presentation on PubMed database.

According to World Health Organization (WHO) 2004 classification scheme lung cancer is divided into two major histologic categories: non-small cell lung carcinoma (non-SCLC) and SCLC [3]. Only 13%-15% of all lung cancers are SCLC; however, SCLC are the most common primary pulmonary neuroendocrine neoplasm [4,5]. Cigarette smoking is the most common risk factor responsible for approximately 95% of cases, and SCLC has the strongest association with cigarette smoking [6].

Most of the patients initially present with complaints of cough, chest pain, hemoptysis, and dyspnea. Symptoms of systemic disease such as weight loss, fatigue, and anorexia are also seen at the time of diagnosis. Patients with invasive or advanced disease may present with specific symptoms such as dysphagia, hoarseness of voice and superior vena cava syndrome (in 10% cases) [7,8]. Numerous endocrine and neurological paraneoplastic disorders including Cushing syndrome, syndrome of inappropriate antidiuretic hormone secretion (SIADH), Lambert-Eaton syndrome, and limbic encephalitis have been described in association with SCLC [7]. No signs and symptoms suggestive of any of these paraneoplastic syndromes were found in our case. Metastatic disease is seen in approximately 60%-70% of patients at the time of diagnosis.

According to a modified version of the Veterans Administration Lung Cancer Study Group (VALSG) staging system SCLC is categorised as:

- (A) Limited-stage SCLC (LS-SCLC),
- (B) Extensive-stage SCLC (ES-SCLC).

However, the International Association for the Study of Lung Cancer (IASLC) has recommended that the American Joint Committee on Cancer (AJCC) tumor-node-metastasis (TNM) staging system for lung cancer to replace the modified VALSG system.

By definition, chest wall invasion is at least T3 disease. In this case (T3N3M1b), there was involvement of ipsilateral supraclavicular lymph nodes (N3) and a nodular lesion was seen in the left adrenal gland on CECT abdomen suggesting distant metastasis (M1b) in addition to chest wall invasion (T3).

Computed tomography (CT) is primarily used to evaluate the primary tumor and its intra-thoracic extent; however, PET/CT is more accurate in the staging of SCLC and can also be used to guide therapy and assess treatment response [9].

SCLC most commonly (in more than 95% cases) presents as a large mass centrally located within the lung parenchyma or as a mediastinal mass [10]. Its presentation as peripheral nodule (in less than 5% cases) is encountered less commonly [8]. Peripheral tumours present usually as a well-defined, homogeneous nodules or masses having speculations and lobular margins [11]. Surgical resection of SCLC is rarely performed and typically indicated in peripheral tumours. Therefore, peripherally located small cell lung carcinoma has better overall survival than central SCLC [12]. However, in our case, although the tumor was located in periphery unlike other peripheral small cell carcinoma it was not a well-circumscribed nodule and was invading chest wall on initial presentation which might be due to a delay in diagnosis. This shows the importance of early diagnosis of small cell carcinoma which is a rapidly growing and very aggressive tumor. Chest wall invasion along with nodal and distant metastasis made the tumor unresectable in our case.

Conclusions

This case highlights a rare presentation in which chest wall mass was the initial clinical presentation of peripheral small cell lung carcinoma. The overall prognosis of SCLC remains poor and five-year survival rate in LS-SCLC patients managed with curative-intent chemotherapy and radiation therapy is 10%-15%. Surgery has role only in early-stage peripherally located small cell lung carcinoma but most patients present with metastasis at the time of diagnosis. Clinical and basic research should continue to identify better treatment strategies that help to increase the duration of survival of patients with SCLC.

Additional Information

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the

submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Meena M, Dixit R, Kewlani JP, Arora P, Goyal M: An unusual chest wall swelling mimicking tumorous growth. *J Assoc Chest Physicians*. 2016, 4:78-80. [10.4103/2320-8775.177509](#)
2. Geha AS, Bernatz PE, Woolner LB: Bronchogenic carcinoma involving the thoracic wall: surgical treatment and prognostic significance. *J Thorac Cardiovasc Surg*. 1967, 54:394-402. [10.1016/S0022-5223\(19\)43081-X](#)
3. Beasley MB, Brambilla E, Travis WD: The 2004 World Health Organization classification of lung tumors. *Semin Roentgenol*. 2005, 40:90-7. [10.1053/j.ro.2005.01.001](#)
4. Govindan R, Page N, Morgensztern D, et al.: Changing epidemiology of small-cell lung cancer in the United States over the last 50 years: analysis of the surveillance, epidemiologic, and end results database. *J Clin Oncol*. 2006, 24:4539-44. [10.1200/JCO.2005.04.4859](#)
5. Rekhtman N: Neuroendocrine tumors of the lung: an update. *Arch Pathol Lab Med*. 2010, 134:1628-38. [10.5858/2009-0583-RAR.1](#)
6. Sher T, Dy GK, Adjei AA: Small cell lung cancer. *Mayo Clin Proc*. 2008, 83:555-67. [10.4065/83.3.355](#)
7. Travis WD: Advances in neuroendocrine lung tumors. *Ann Oncol*. 2010, 21:vii65-71. [10.1093/annonc/mdq380](#)
8. Kaifi JT, Kayser G, Ruf J, Passlick B: The diagnosis and treatment of bronchopulmonary carcinoid. *Dtsch Arztebl Int*. 2015, 112:479-85. [10.3238/arztebl.2015.0479](#)
9. Shepherd FA, Crowley J, Van Houtte P, et al.: The International Association for the Study of Lung Cancer lung cancer staging project: proposals regarding the clinical staging of small cell lung cancer in the forthcoming (seventh) edition of the tumor, node, metastasis classification for lung cancer. *J Thorac Oncol*. 2007, 2:1067-77. [10.1097/JTO.0b013e31815bdc0d](#)
10. Chong S, Lee KS, Chung MJ, Han J, Kwon OJ, Kim TS: Neuroendocrine tumors of the lung: clinical, pathologic, and imaging findings. *Radiographics*. 2006, 26:41-57. [10.1148/rg.261055057](#)
11. Yabuuchi H, Murayama S, Sakai S, et al.: Resected peripheral small cell carcinoma of the lung: computed tomographic-histologic correlation. *J Thorac Imaging*. 1999, 14:105-8. [10.1097/00005382-199904000-00007](#)
12. Kanaji N, Sakai K, Ueda Y, et al.: Peripheral-type small cell lung cancer is associated with better survival and higher frequency of interstitial lung disease. *Lung Cancer*. 2017, 108:126-33. [10.1016/j.lungcan.2017.03.013](#)