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Case Report

Internal Medicine Section

Endobronchial Small Cell Lung Cancer Masquerading as Carcinoid Tumour in a Young Female: A Case Report

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ABSTRACT

Bronchial Carcinoid Tumours, also known as BCTs, are remarkable neuroendocrine malignancies that can denature chemical compounds with biological activity. The phrase "bronchial adenomas" was once used to refer to BCTs; however, this nomenclature is no longer utilised because BCTs are neither glandular nor invariably benign. Instead, the term "Bronchial Cystic Tumours" is used to refer to BCTs in this context. They are normally a neoplasm that expands slowly and displays a variety of behaviours, yet they are also capable of expanding rapidly and being significantly more aggressive in general. Despite the fact that smoking is a significant risk factor for Small Cell Lung Cancer (SCLC), which is a more severe form of lung cancer than carcinoid, surgery is still the treatment of choice for carcinoid tumours, while chemoradiation and chemotherapy are the only options for patients with stage four SCLC. Here, the authors discuss the case of a 30-year-old young female patient who was erroneously diagnosed with endobronchial carcinoid, which turned out to be SCLC. Because of the significant connection between smoking and SCLC, malignancies are not usually seen in young females. The relevant patient's investigations were consistent with small cell carcinoma of the lung. Immunohistochemistry for CD56 and synaptophysin turned out to be positive. The patient received six cycles of chemotherapy with an injection of Cisplatin and an injection of Etoposide every three weeks. She was followed-up after three months and did have symptomatic relief.

Keywords: Bronchial carcinoid tumours, Surgical pathology, Typical carcinoid

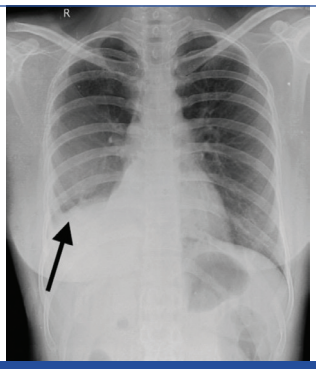
CASE REPORT

A 30-year-old non-smoking female patient presented with primary complaints of blood-tinged sputum and cough with occasional mucoid expectoration on and off for five years. She had taken symptomatic treatment in the form of cough syrup and antibiotics. Three months prior, she had a single episode of massive haemoptysis and received an injection of Tranexamic acid, an injection of Ethamsylate, an injection of Vitamin K, and other supportive management at a nearby hospital. She was advised to undergo bronchial artery embolisation but could not do so due to lack of services at that time. She was under observation for five days and discharged as there was no repeat episode of haemoptysis.

Due to the lack of tertiary health care facilities and poor socio-economic factors, nothing much was done for her other than symptomatic management. She did not have any associated co-morbidities. On examination, her general condition was moderate, her pulse rate was 110/minute, respiratory rate was 20/minute, and blood pressure was 110/60 mmHg.

Systemic examination of the respiratory system revealed reduced breath sounds on the right side. Cardiovascular, central nervous system, and per abdominal examination were unremarkable. During the present hospital stay of one month, she developed malaise and high-grade fever. After a thorough assessment, her diagnosis was narrowed to an endobronchial mass likely to be carcinoid or bronchocoele and less likely a malignant lesion. Given her symptoms, she underwent various haematological and radiological investigations, which are further detailed in the report. Her chest X-ray revealed right middle lobe consolidation [Table/Fig-1].

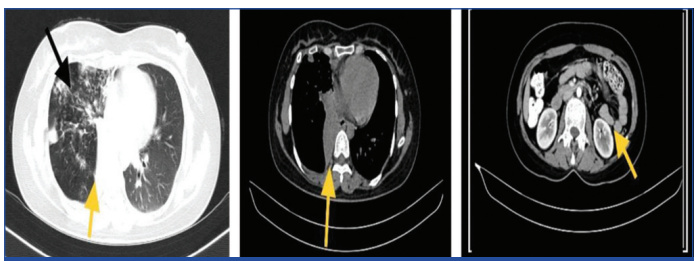
Haematological investigations were unremarkable except for low haemoglobin (9.9 grams%). Liver and kidney function tests were within normal limits [Table/Fig-2]. Contrast-Enhanced Computed Tomography (CECT) of the thorax suggested right lower lobe collapse with effusion [Table/Fig-3].



[Table/Fig-1]: Chest X-ray Postero-anterior (PA) view showing right middle lobe collapse with pleural effusion.

Investigations	Results
Haemoglobin	9.9 gram% (11-14 gram%)
Total leucocytic count (/mm)	11500
Total platelet count (per microliter blood)	4.49
CD 56	Positive
Synaptophysin	Positive
Ki67	Positive

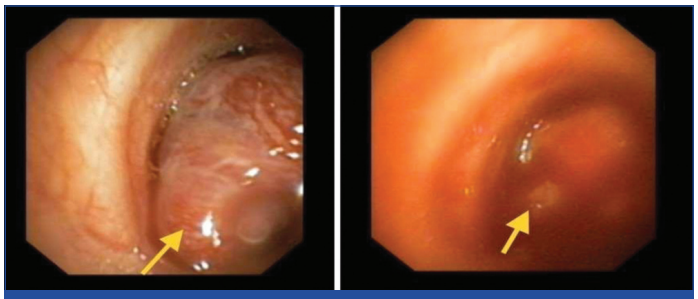
[Table/Fig-2]: Relevant haematological findings and immunohistochemical markers.



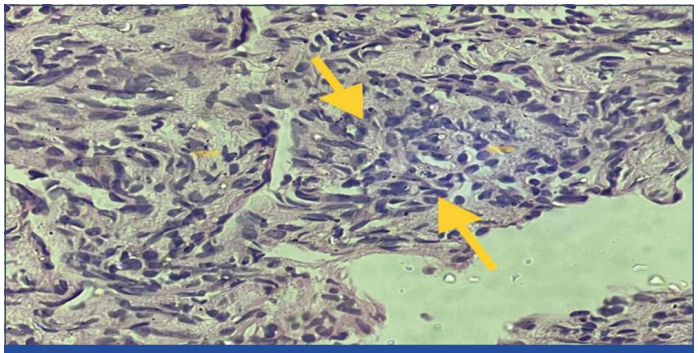
[Table/Fig-3]: Contrast Enhanced Computed Tomography (CECT) Thorax and Abdomen: Right lower lobe collapse with effusion with peripherally enhancing solid cystic lesion measuring approximately 4.3×4.2×3.6 centimeters likely metastasis.

Furthermore, a bronchoscopy was done, which revealed an endobronchial vascular mass lesion, as depicted in [Table/Fig-4]. A biopsy was taken from the same and sent for histopathological examination, which revealed scattered atypical round blue cells that could be seen forming nests in the fibro-collagenous stroma suggestive of primary epithelial malignancy, as shown in [Table/Fig-4].

The Histopathological Examination (HPE) image of the endobronchial tumour biopsy is shown in [Table/Fig-5].



[Table/Fig-4]: Bronchoscopic image showing an endobronchial vascular mass in the right main bronchus with post-endobronchial biopsy bleeding seen.



[Table/Fig-5]: Microscopic image: Scattered atypical round blue cells can be seen forming nests in the fibro-collagenous stroma suggestive of primary epithelial malignancy- small cell carcinoma of the lung.

The patient's reports were consistent with a small cell carcinoma of the lung. Immunohistochemistry for CD56 and synaptophysin turned out to be positive. The patient was referred for Oncologist's opinion and she received six cycles of chemotherapy with an injection of Cisplatin and an injection of Etoposide three weekly. She was followed-up after three months and did have symptomatic relief.

DISCUSSION

In India, lung cancer accounts for 5.9% of all cancers and 8.1% of all cancer-related deaths [1]. According to demographic data, lung cancer is the second most common cancer leading to death in the United States [2]. It is the most common reason for people to die from cancer, regardless of gender. About 25% of all deaths from cancer can be attributed to this factor. The only way to differentiate between two primary lung cancer which are referred to respectively as SCLC and non SCLC (NSCLC). NSCLC accounts for around 85% of lung cancer cases, while SCLC accounts for approximately 15% [2]. SCLC is an incredibly rare occurrence to find SCLC in someone who has never smoked. When something like this happens, the diagnosis needs to be meticulously documented with a comprehensive immunohistochemistry study to rule out the possibility of lymphoma, melanoma, or carcinoid. When a diagnosis of SCLC has been established, it is important to take into account the remote but not unheard-of chance of a mixed case of SCLC and adenocarcinoma. In these situations, Epidermal Growth Factor-Receptor (EGF-R) mutations have been identified in an increasing number of case reports, which raises the prospect of treatment with a tyrosine kinase inhibitor. Kyritsis I et al., carried out a study that was quite similar to the present study [3]. In that study, a young, non smoking female patient was diagnosed incorrectly with SCLC.

According to research conducted in the United States, SCLC accounts for 14% of all lung malignancies and over 30,000 new cases are identified annually [4]. It has despaired that SCLC has a significant connection to Paraneoplastic syndromes express themselves as endocrine and neurological symptoms. There are many dissimilar neurologic syndromes, some of which include Lambert-Eaton Myasthenic syndrome, encephalomyelitis, and sensory neuropathy. Paraneoplastic syndromes are strongly associated with SCLC because the antibodies that are generated, known as anti-Hu, have been shown to cross-react with human neuronal Ribonucleic Acid (RNA)-binding proteins, resulting in the development of enormous neurologic abnormalities, including paraneoplastic encephalomyelitis. It is possible for this to happen even before the patient is aware that they have the disease. The syndrome of inadequate ADH secretion (SIADH). is another name for hyponatremia of cancer. Patients diagnosed with SCLC have a significantly higher risk of SIADH than Cushing syndrome [5]. Fortunately, not found in the present study. The characteristics that suggest a bad prognosis include variables that might be used to forecast results of a poor Performance Status (PS) of 3-4, an advanced disease stage, severe weight loss, and markers linked with an excessive bulk of disease. The breast, the kidney, and the colon are the locations that are most frequently associated with endobronchial metastases. In contrast to the present study, which showed that adrenal metastasis was present [6]. Lesions that are polypoid or nodular in appearance and are covered with necrotic material is a common presentation of metastatic endobronchial malignancies. The most common lesion in this cell type is characterised by a polypoid shape and a rough surface coated with necrotic material. Specific examples have been recorded despite the fact that SCLC with endobronchial development is an extremely uncommon condition. SCLC is usually treated with palliated chemotherapy with or without radiotherapy, depending on the tumour size. A study by Sinha N et al., stated that the incidence of SCLC in a never-smoker female, accounts for 2.9% [7]. Also, she found subcutaneous metastasis, which is rare for SCLC, in contrast to present studies in the form of adrenal metastasis. A study by Slotman BJ et al., in the Netherlands signified the use of prophylactic irradiation in patients who respond well to chemotherapy [8].

Khan P et al., studied various types of epigenetic modifications in the form of Deoxyribonucleic Acid (DNA), methylation, acetylation, etc., that serve as predictive biomarkers for the prognosis and treatment stratification of SCLC [9]. The initial response to cisplatin and etoposide treatment for SCLC is quite favourable; nevertheless, the disease almost always develops a quick resistance to chemotherapy, which ultimately results in mortality within one year [10]. Newer studies by Meijer JJ et al., studied the relevance of omics profiling has led to the development of immune-checkpoint inhibitors as single agents or in combination with chemotherapy, which, however, resulted in a prolonged benefit only for a small subset of patients [11]. SCLC with endobronchial development is a rare tumour presentation found in a study by Kurishima K et al., [12].

CONCLUSION(S)

Despite the fact that SCLC with endobronchial development is an exceedingly rare tumour presentation, the diagnosis should not be discounted in patients who arrive with a pulmonary tumour close to the bronchus and an endobronchial polypoid lesion. In the case of a female, especially one who has never smoked, one must always take the route of caution and consider the possibility of cancer, even if the symptoms are initially subtle and gradually worsen over time.

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