

An Unusual Presentation of Squamous Cell Carcinoma in a Never Smoker: A Case Report



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Running Title Rapidly Progressing Squamous Cell Carcinoma of lung in a Never Smoker



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ABSTRACT

Lung Cancer is one of the most common types of cancer found among smokers. However, approximately 10% of lung cancer patients are non-smokers. Non-smokers are frequently seen developing Adenocarcinoma, a type of non-small cell carcinoma with a female predominance. The incidence of Squamous cell carcinoma among non-smokers is very low. Moreover, studies have shown that tetra site metastasis in the case of Squamous cell carcinoma of the lung is almost as rare as 0.6% [1]. The authors report here in this article a case report of a rare and aggressive presentation of Squamous cell carcinoma in a non-smoker. This is a case of a 50-year-old male patient who is a non-smoker, presented with complaints of exertional dyspnoea and cough with expectoration for 3 months which had aggravated since 15 days, associated with hoarseness of voice and diffuse headache since 15 days. There was a history of significant weight loss and loss of appetite for 3 months. CECT thorax revealed a heterogeneously enhancing mass lesion in the anterior segment of the left upper lobe encasing the left pulmonary artery with evidence of liver, adrenal and vertebral metastasis. During the hospital stay, the patient developed complete ptosis of the right eye. MRI brain was done which showed features suggestive of metastasis involving bilateral cerebral and cerebellar hemispheres. USG guided lung biopsy was done and was suggestive of moderately differentiated Squamous cell carcinoma. The patient was planned to be further worked up for IHC markers and PET CT scan to determine the further line of treatment however, unfortunately, the patient succumbed to the disease within 1 week of histopathological diagnosis.

Introduction

Lung Cancer is one of the leading causes of cancer-related deaths [2]. Moreover, lung cancer is predominantly seen in smokers. Squamous cell carcinoma, which is a type of non-small cell carcinoma, is more common in smokers. 10-15% of lung cancers can also occur in non-smokers. Adenocarcinoma, which is also another type of non-small cell carcinoma, is predominantly seen in non-

smokers with a female preponderance. The incidence of Squamous cell carcinoma among non-smokers is very low. Distant metastasis is usually associated with Small cell carcinoma compared to other types of lung malignancy. Distant metastasis can occur to the brain, bone, liver, adrenal glands, and lymph nodes. Moreover, Small cell carcinoma is known to be highly malignant and aggressive whereas Squamous cell carcinoma of the lung are usually slow-growing tumours and are diagnosed before distant metastasis can occur. With this case report, the authors would

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Table 1. Blood Investigations

HEMOGLOBIN	11.5	13 – 17 gm/dl
TOTAL LEUCOCYTE COUNT	23.41	4 – 11 x10 ³ /μL
NEUTROPHIL	88.8	40 – 75 %
LYMPHOCYTE	7.1	25 – 40 %
EOSINOPHIL	0.0	1 – 6 %
MONOCYTE	3.8	1 - 10 %
BASOPHIL	0.3	0 - 1 %
PLATELET COUNT	275	150 - 450 x10 ³ /μL
RBC COUNT	4.31	4.5 - 5.5 million/cumm
PCV (PACKED CELL VOLUME)	35.2	40 - 50 %
MCV	81.7	80 - 100 fl
MCH	26.7	27 - 31 pg
MCHC	32.7	32 - 36 gm/dl

Table 2. Blood Investigations

Sodium	134 mmol/L
Potassium	3.4 mmol/L
Chloride	90 mmol/L
Creatinine	0.5 mg/dl
Urea	26 mg/dl
Total Bilirubin	0.9 mg/dl
Direct Bilirubin	0.3 mg/dl
Indirect Bilirubin	0.6 mg/dl
SGOT	35 U/L
SGPT	24 U/L
Alkaline Phosphatase	223 U/L
Total protein	7.6 gm/dl
Albumin	3.1 gm/dl
Globulin	4.5 gm/dl
A/G	0.7
ABG	
pH	7.46
PCO2	43.8 mmHg
pO2	67.5 mmHg
Hco3	31.4 mmol/L
SPO2	93.5%

like to highlight the rare features of presentation in Squamous cell carcinoma of the lung.

Case Presentation

This is a case of a 50-year-old male patient who is a non-smoker, a storekeeper by occupation with a known history of Diabetes mellitus for 2 years, who presented to the authors with complaints of exertional dyspnoea and cough with expectoration for 3 months which had aggravated since 15 days prior to his hospital admission. He also had a history of hoarseness of voice and complaints of diffuse headache since 15 days. He also gave a history of significant weight loss and loss of appetite for 3 months.

On examination, the patient was poorly built and nourished with a BMI of 17.9 kg/m². He was tachypnoeic and afebrile. He also had grade 2 clubbing.

With pulse rate- 105 beats/min, BP- 110/70mmHg and SpO₂ – 94% @room air.

Inspection: Trachea shifted to the left

Palpation: Decreased chest expansion of the left side chest wall

Percussion: Dullness over left supraclavicular, mammary and suprascapular areas.

Auscultation: Absent breath sounds over left supraclavicular, mammary and suprascapular areas with minimal coarse crepitations.

Routine blood investigations were done and are shown in Tables 1 and 2. Chest X-ray and CECT thorax were done in view of these symptoms (Figure 1) which revealed a heterogeneously enhancing mass lesion in the anterior segment of the left upper lobe encasing the left pulmonary artery with evidence of liver, adrenal, and vertebral metastasis. The patient's clinical condition began to deteriorate by the 3rd day of admission with worsening of breathlessness, and he developed complete ptosis of his right eye. Following this, an MRI brain was done in view of his persistent headache with complete ptosis, which was suggestive of brain metastasis showing multiple ring-enhancing lesions in bilateral cerebral and cerebellar hemispheres (Figures 2 and 3).

In view of the patient's deteriorating clinical condition during the hospital stay, bronchoscopy could not be performed and a USG-guided lung biopsy was done. Following this, the histopathology report was suggestive of moderately differentiated squamous cell carcinoma with extensive necrosis (Figures 4 and 5). The patient was planned to be further worked up for IHC markers and a PET-CT scan to determine the further line of treatment. However, unfortunately, the patient succumbed to the disease within 1 week of the histopathological diagnosis.



Fig. 1. Left upper zone non homogenous opacity with homogenous opacity of mid zone with ipsilateral elevation of diaphragm



Fig. 2. Multiple rings enhancing lesions in bilateral cerebral and cerebellar hemispheres- suggestive of metastasis

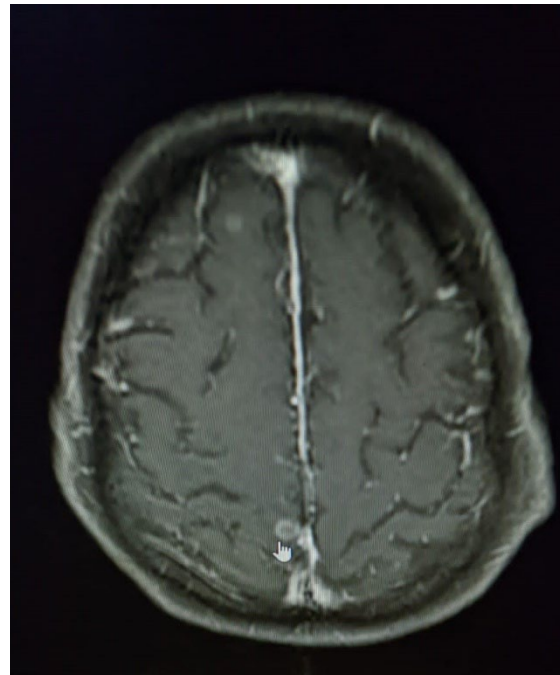


Fig. 3. Multiple rings enhancing lesions in bilateral cerebral and cerebellar hemispheres- suggestive of metastasis

Discussion

Squamous cell carcinoma of the lung is a type of non-small cell carcinoma, accounting for about 30% of the lung cancers that occur [1]. It is more commonly seen to be associated with tobacco smoking [2].

Whereas Adenocarcinoma, a type of non-small cell carcinoma, is the most common type of lung cancer seen in non-smokers who are mostly women and also in the younger age group [3]. In this case, Squamous cell carcinoma has developed in a 50-year-old male patient who is a non-smoker.

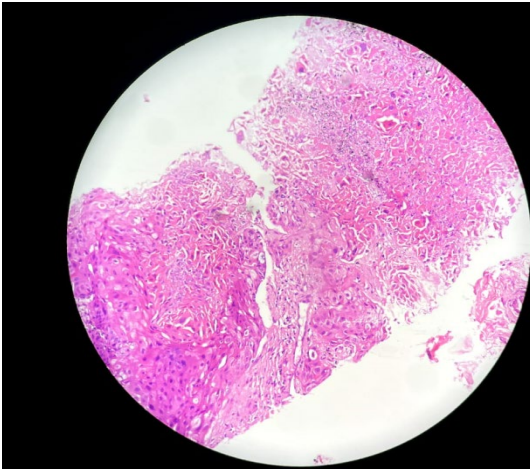


Fig. 4. Invasive Squamous cell Carcinoma with cells arranged in nests, lymphocytic aggregates around tumour nests with wide areas of necrosis

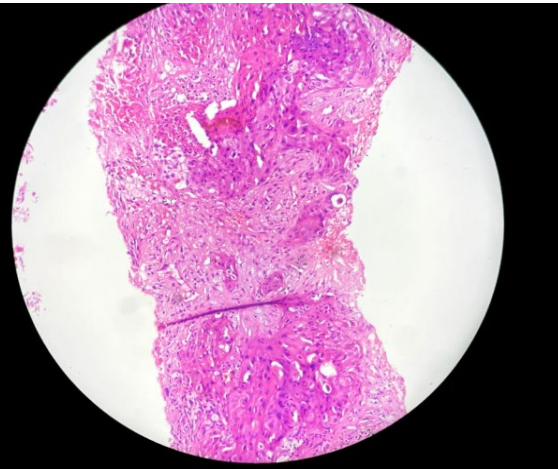


Fig. 5. Individual cell keratinization and keratin pearl formation

A study published by Lorraine et al. in 2017 showed that the proportion of never smokers with non-small cell lung cancer is on the rise, however, the number of squamous cell carcinoma in never smokers was low [4]. Literature tells us that non-small cell tumours generally have a slow doubling time compared to small cell tumours.

According to a study conducted by Xuan Wang et al. in 2019 on patterns of extra-thoracic metastasis in various types of lung cancers, it was found that the incidence rate of metastasis to bone was highest in Small cell carcinoma (23.3%) and least in Squamous cell carcinoma (11.2%), and the frequency of brain and liver metastasis were relatively low in Squamous cell carcinoma [1]. In the same study, they also found out that tetra site metastasis in the case of Squamous cell carcinoma occurred only in 0.6% of patients. In their study, distant metastasis was common in Adenocarcinoma and in large cell carcinoma while it was low in Squamous cell carcinoma. This emphasizes the rare presentation encountered in this case.

Conclusion

Non-small cell carcinoma among non-smokers is on the rise and hence there is a need for further studies and assessment of other risk factors associated with the development of lung malignancy. In this case, since the patient was a non-smoker who developed Squamous cell carcinoma, other etiological risk factors like outdoor air pollution, environmental tobacco smoke might have contributed to the development of lung malignancy. It can also be concluded that co-metastasis has a grave prognosis.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

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