Case Report

©2023 NRITLD, *National Research Institute of Tuberculosis and Lung Disease, Iran*

ISSN: 1735-0344 *Tanaffos 2023; 22(4): 444-446*

TANAFFOS

Tracheal Small Cell Carcinoma in a 52-year-old Male: A Case Report

Mehdi Salimi, Dena Mohamadzadeh

Clinical Research Development Center, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran

Received: 30 December 2022
Accepted: 22 July 2023

Correspondence to: Mohamadzadeh D
Address: Clinical Research Development Center, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran
Email address: denamohamadzadeh75@gmail.com

Primary small cell carcinoma of the trachea is a rare tumor fitting in the spectrum of neuroendocrine tumors. Due to the rarity and unspecific symptoms, the tumor is frequently misdiagnosed with other chronic lung diseases, and diagnosis is delayed. Here, we described a 52-year-old male presenting with dyspnea and cough. He had been treated with bronchodilators for months for suspected asthma or bronchiolitis without improvement. He had central wheezing on the general examination. Chest CT scan was unremarkable except for soft tissue prominence in the thoracic trachea. A large exophytic tumor was observed on bronchoscopy. A biopsy specimen was taken and revealed small cell carcinoma of the trachea. The patient succumbed to illness a short time after the bronchoscopy and before receiving any treatment. Our effort through this case report was to raise awareness of this rare tumor since a delay in diagnosis could lead to serious complications and even death.

Keywords: Small cell carcinoma; Tracheal tumors; Neuroendocrine tumors

INTRODUCTION

Small cell carcinoma (SCC) is divided into two groups based on its origin: small cell lung carcinoma (SCLC) and extra-pulmonary small cell carcinoma (EPSCC). EPSCC accounts for 2.5% to 5% of all cases of SCCs. The most common sites of EPSCC include gastrointestinal and genitourinary tracts, head, and neck. Tracheal small cell carcinomas are rare tumors and could be confused with metastasis from SCLC. Due to the rarity of this tumor, prognosis and therapeutic strategies are not well defined (1). Here, we report primary tracheal small cell carcinoma in a 52-year-old male which was confirmed by histopathologic findings.

CASE SUMMARIES

The patient was a 52-year-old man with a 3-month history of progressive dyspnea, wheezing, and dry cough. He did not report fever or hemoptysis. His past medical and drug history was unremarkable. He denied alcohol or cigarette abuse. He had been treated with bronchodilators and antihistamines for suspected asthma or bronchiolitis. Due to the persistence of symptoms, he was referred to the pulmonology clinic for additional workup. On the meeting day, his chief complaint was dyspnea and cough. On general examination, respiratory rate was mildly elevated (RR= 20/min), pulse rate was 94 beats/min and blood pressure was 125/80 mm/Hg. Oxygen saturation was 95% on room air. Central wheezing was detected on respiratory system examination. The rest of the examination including the cardiovascular system and abdomen were within normal limits. Chest CT (computed tomography) scan revealed soft tissue prominence within the thoracic trachea (Figure 1). No mass or infiltration was observed in the lung's parenchyma. He was hospitalized and underwent a

bronchoscopy. A big exophytic tumor filling the tracheal lumen was observed within the thoracic trachea (Figure 2). A biopsy was taken. Unfortunately, he succumbed to illness a short time after the procedure. The possible reason was respiratory arrest due to the life-threatening narrowing of the trachea lumen following local inflammation and bronchospasm after the bronchoscopy procedure and biopsy taking. After the patient's death, the tumor biopsy revealed a malignant small round-cell tumor with minimal cytoplasm, high mitotic rate, no distinct nuclei, and thin fibrovascular stroma compatible with small-cell carcinoma (Figure 3).

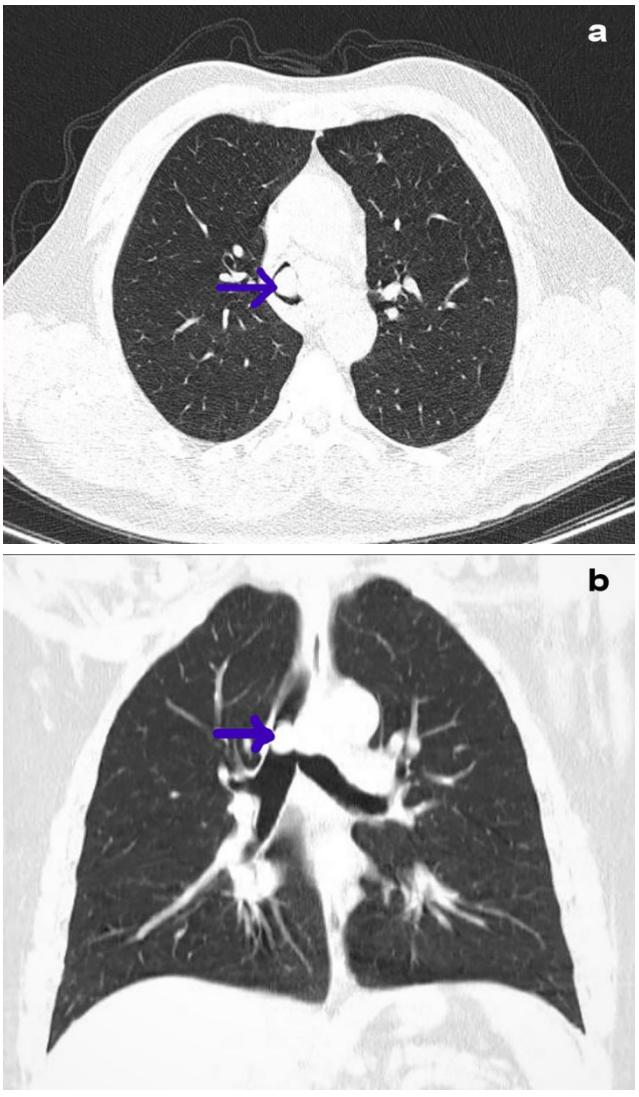

Figure 1. a: Transverse section of the chest CT scan of the patient showing soft tissue prominence within the thoracic trachea (blue arrow). b: Coronal section of the chest CT scan showing the tumor filling the lumen right above the carina

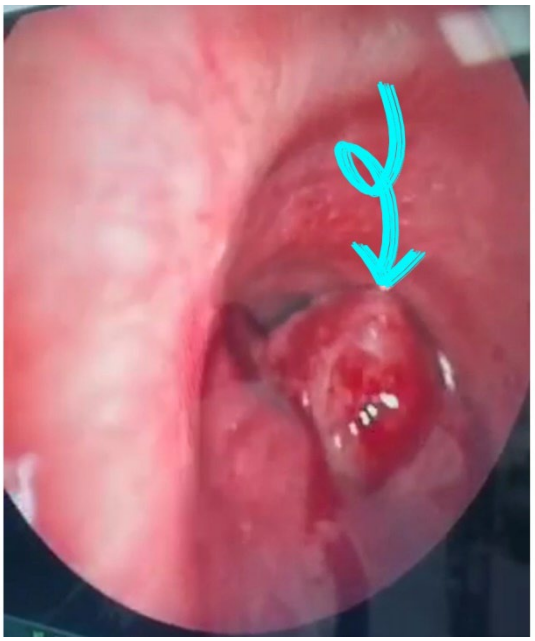

Figure 2. Bronchoscopy showing a large exophytic tumor filling the tracheal lumen

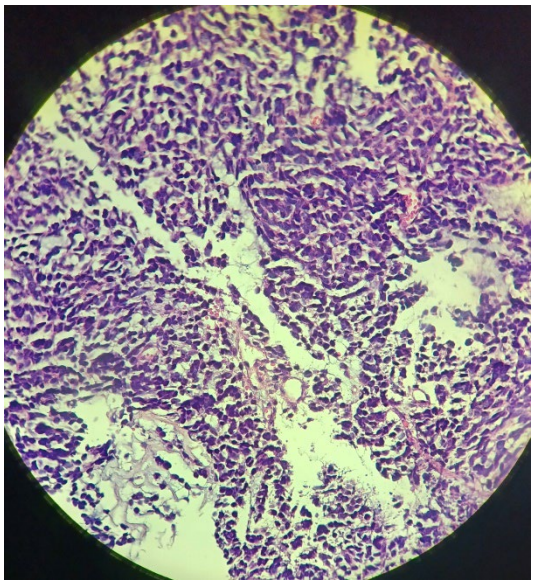

Figure 3. The biopsy specimen of the tumor shows small round cells with minimal cytoplasm, high mitotic rate, and no distinct nuclei. Thin fibrovascular stroma is observed within the malignant cells. The features are compatible with small cell carcinoma (x40) (hematoxylin-eosin stain).

DISCUSSION

A 52-year-old male with a three-month history of dyspnea, cough, and wheezing was described in this case report. A large tumor in the thoracic trachea was detected by a chest CT scan and bronchoscopy. Small cell carcinoma

was confirmed by the histopathologic findings of the biopsy specimen. Primary tracheal cancers have been described as a rare category accounting for about 0.2% of respiratory tract cancers and 0.03% of all malignant diseases. The most commonly reported primary cancer of the trachea is squamous cell carcinoma (SQC), followed by adenoid cystic carcinoma (ACC). SCC is one of the rarest primary cancers of the trachea. About 90% of primary tracheal cancers are malignant in adults. The most prevalent symptoms are dyspnea, cough, hemoptysis, hoarseness, and episodic stridor. Due to non-specific symptoms, the diagnosis of SCC is delayed and the patient might present with advanced disease (2, 3). Similar to our patient, early non-specific symptoms might lead to misdiagnosis with asthma, chronic obstructive disease, or other respiratory diseases. In our patient, tracheal obstruction was advanced and led to death.

When SCC of the trachea is suspected, a chest CT scan should be done to investigate SCLC as the primary source of the tracheal tumor. In our patient, the chest CT scan did not show SCLC. Bronchoscopy is required for diagnosis and staging. The appearance of the tumor and histopathologic finding of the biopsy specimen taken during bronchoscopy helps to achieve these goals. Pulmonary function test shows a pattern compatible with fixed airway obstruction. In our case, a large exophytic tumor was observed within the tracheal lumen. The tumor is commonly located at the lower trachea. Similarly, in our patient, it was located at the thoracic trachea, right above the bifurcation of the trachea. Brain MRI is recommended when neurological symptoms suggesting brain metastasis are present. Also, PET (positron emission tomography) might be used to evaluate distant metastasis. SCC has the worst prognosis among primary tracheal cancers. The factors associated with poor prognosis are older age, lymph node involvement, and distant metastasis (4, 5).

The best therapeutic approach for tracheal SCC is not clear. Surgical resection has been associated with better survival outcomes in several previous reports. There are some contraindications to surgery including distant metastasis, extensive lymph node involvement, prior radiation to the mediastinum, and prior surgery. Chemotherapy and radiotherapy are other therapeutic options. Qiu et al. (6) reported a case of SCC of the cervical trachea who underwent surgical resection followed by adjuvant therapy. The endo-bronchial stents could be useful in unresectable tumors. Chua et al. (7) reported a 47-year-old male with dyspnea, cough hoarseness, and inspiratory stridor. CT scan revealed a tracheal mass and tissue biopsy was consistent with small cell carcinoma. He received chemotherapy along with radiotherapy. An endo-bronchial stent was placed. He was followed 2 years after treatment without recurrence of the malignancy.

In conclusion, primary small cell carcinoma of the trachea is a rare tumor. Due to unspecific symptoms, this tumor may be confused with other chronic lung diseases. It is important to be aware of the symptoms of this tumor while delayed diagnosis might lead to severe complications or even death.

REFERENCES

1. Ahn Y, Chang H, Lim YS, Hah JH, Kwon TK, Sung MW, Kim KH. Primary tracheal tumors: review of 37 cases. ***J Thorac Oncol*** 2009;4(5):635-8.
2. Chen K, Yang Z, Zhang X, Zhao T, Zhang X, Li W, et al. Clinical features and prognosis of primary tracheal small cell carcinoma: a population-based analysis. ***Transl Cancer Res*** 2020;9(2):882-890.
3. Honings J, Gaissert HA, van der Heijden HF, Verhagen AF, Kaanders JH, Marres HA. Clinical aspects and treatment of primary tracheal malignancies. ***Acta Otolaryngol*** 2010;130(7):763-72.
4. Li W, Ellerbroek NA, Libshitz HI. Primary malignant tumors of the trachea. A radiologic and clinical study. ***Cancer*** 1990;66(5):894-9.
5. Gelder CM, Hetzel MR. Primary tracheal tumours: a national survey. ***Thorax*** 1993;48(7):688-92.
6. Qiu J, Lin W, Zhou ML, Zhou SH, Wang QY, Bao YY. Primary small cell cancer of cervical trachea: a case report and literature review. ***Int J Clin Exp Pathol*** 2015;8(6):7488-93.
7. Chua W, Patel N, Glassman L, Carlton J, Talwar A. A case of primary small cell carcinoma of the trachea. ***Journal of Bronchology & Interventional Pulmonology*** 2008;15(1):49-51.