CASE REPORT

Small Cell Lung Cancer Presenting with Hoarseness of Voice

Trupthi Das[1], Jeevika M U[2], Dhaval Kumar Solanki[3], Kiran Kumar[4]

[1]Junior Resident, Department of Radiology, [2]Professor and HOD, Department of Radiology, [3]Junior Resident, Department of Radiology, [4]Assistant Professor, Department of Radiology, JJM Medical College, Davangere, Karnataka, India.

Corresponding author: Dr Trupthi Das, Department of Radiology, JJM Medical College, Davangere- 577002, Karnataka, India.

How to cite this article: Trupthi Das, Jeevika M U, Dhaval Kumar Solanki, Kiran Kumar. Small cell lung cancer presenting with hoarseness of voice. International Journal of Contemporary Medicine Surgery and Radiology. 2022;8(1):A9-A11.

A B S T R A C T

Introduction: We report a case of small cell lung cancer presenting with left vocal cord palsy secondary to compression by mediastinal lymphadenopathy at the level of aorto-pulmonary window.

Case report: 57 years old chronic smoker presented with sudden onset of hoarseness of voice from 1 month. CT of larynx showed features consistent with unilateral left vocal cord palsy. CT imaging of thorax revealed a relatively well-defined soft tissue attenuating spiculated nodule in the apical segment of upper lobe of right lung and mediastinal lymphadenopathy. Mediastinal lymphadenopathy at the level of aorto-pulmonary window was determined as the cause of left recurrent laryngeal nerve palsy.

Conclusion: Mediastinal lymphadenopathy at the level of aorto-pulmonary window is a rare cause of unilateral recurrent laryngeal nerve palsy.

Keywords: Small Cell Lung Cancer, Vocal Cord Palsy, Mediastinal Lymphadenopathy, Hoarseness of Voice.

INTRODUCTION

Unilateral vocal cord palsy is a sign of an underlying disease condition rather than it being a disease by itself. Various causes of unilateral vocal cord palsy include bronchogenic carcinoma, trauma, iatrogenic injury, aortic aneurysm, mediastinal lymphadenopathy and enlarged left auricle[1] causing compression RLN at multiple levels including aorto-pulmonary window (APW). The available literature reports mediastinal lymphadenopathy at the level of APW as a rare cause of unilateral recurrent laryngeal nerve palsy accounting for 0.45% of all unilateral recurrent laryngeal neve palsies.[2] Small cell lung cancer is known to cause widespread mediastinal lymph node metastasis.[3] In this study, we report a case of left recurrent laryngeal nerve palsy caused by metastatic mediastinal lymphadenopathy from right lung malignancy.

CASE PRESENTATION

57 years old chronic smoker presented with sudden onset of hoarseness of voice from 1 month which was sudden in onset. He was a chronic smoker of 30 pack years. There was on and off episodes of cough. However, there was no history of fever, weight loss, sore throat or dysphagia. He was not a known case of diabetes mellitus or hypertension.

On direct laryngoscopy, left vocal cord was in paramedian position with atrophy and absent mobility. There was compensatory over abduction of right vocal cord. Local causes of left vocal cord palsy were ruled out.

CT imaging of larynx showed reduced bulk of left true vocal cord (Fig 1a) with its laterization at level of cricoarytenoid joint indicating its paramedian position. There was anteromedial deviation of left arytenoid cartilage (Fig 1b) with medialisation and thickening of left aryepiglottic fold. Ipsilateral dilatation of vallecula and dilated ventricle on contralateral side (Fig 1c) was noted. E phonation CT technique showed hyper-adducted right true vocal cord (Fig 1d) with no change in position of left true vocal cord. All the findings were consistent with unilateral left vocal cord palsy.

CT imaging of thorax revealed a relatively well-defined soft tissue attenuating spiculated nodule (Fig 2a) measuring 2.1x2.0x0.7cm (anteroposterior x transverse x craniocaudal) in the apical segment of upper lobe of right lung. It showed post contrast enhancement. Multiple enlarged mediastinal

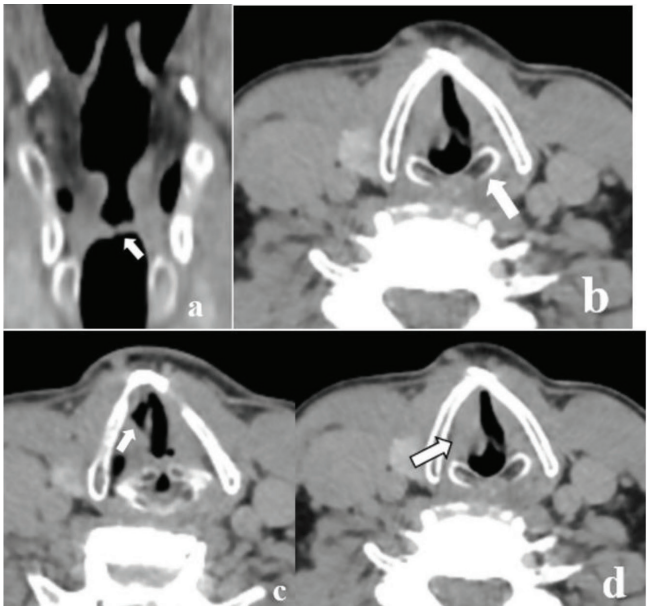

Figure-1: CT larynx of 57 years old male

ISSN (Online): 2565-4810; (Print): 2565-4802 | ICV 2019: 98.48 |

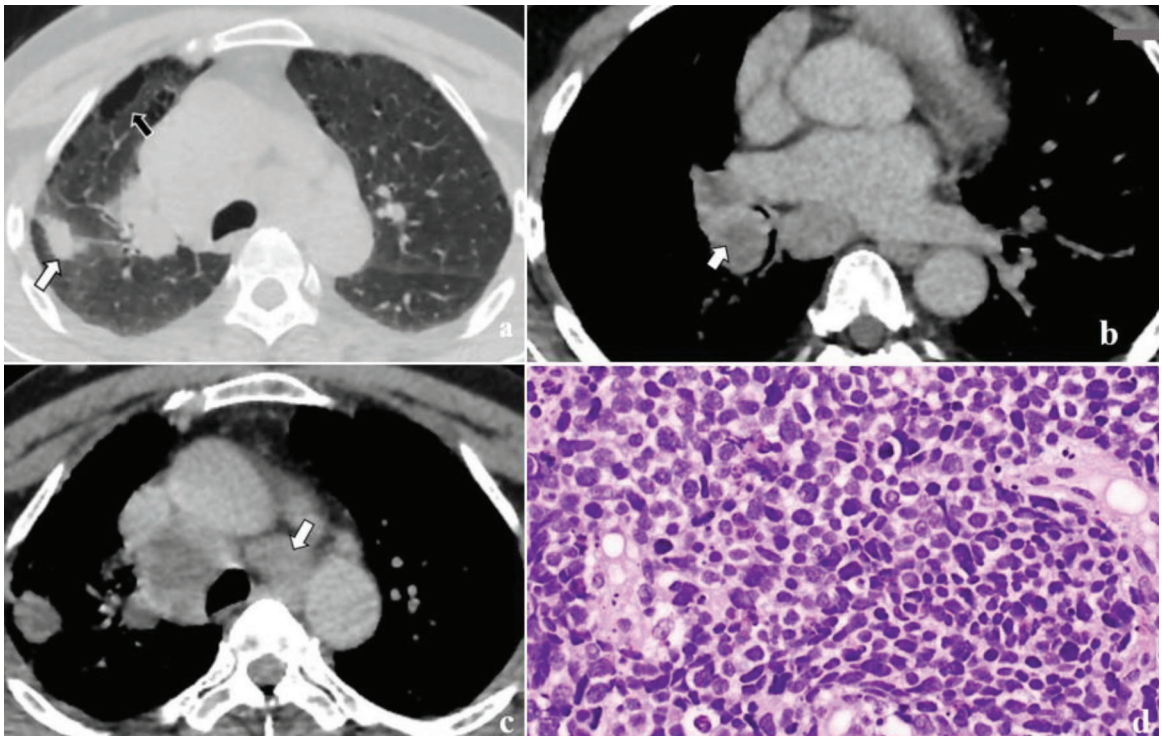

Figure-2: CT, CECT thorax and histopathology of 57 years old male

lymph nodes (Fig 2b,2c) were noted at level 4R, 4L, 5(APW), 7, 8, 10(R), 11(R) mediastinal stations, few of which showed necrosis. Cause of left recurrent laryngeal nerve palsy was attributed to enlarged lymph node (Fig 2c) at level 5 (aorto-pulmonary window). CT guided biopsy of the spiculated lung nodule revealed small cell carcinoma of lung (Fig 2d).

Coronal CT in soft tissue window (Fig 1a) shows reduced bulk of left true vocal cord (arrow). Axial CT at level of arytenoids (Fig 1b) shows paramedian position of left vocal cord anteromedial deviation of left arytenoid cartilage (arrow). Axial CT (Fig 1c) shows dilated ventricle on right side (arrow). E phonation axial CT (Fig 1d) shows hyper-adducted right true vocal cord (arrow). All findings are consistent with left vocal cord palsy.

Axial CT in lung window (Fig 1a) shows a soft tissue attenuating spiculated nodule (white arrow) in the apical segment of upper lobe of right lung with adjacent emphysematous changes (black arrow). Axial CECT in mediastinal window (Fig 2b) shows multiple enlarged mediastinal lymph nodes (arrow). Axial CECT in mediastinal window (Fig 2c) enlarged lymph node at level 5 (aorto-pulmonary window). H and E stained 200x microscopy (Fig 2d) of the spiculated nodule shows features of small cell lung cancer.

DISCUSSION

There is scarce literature regarding the prevalence of mediastinal lymphadenopathy as the cause left recurrent laryngeal palsy. Few studies report its prevalence to be 0.45% of all causes of unilateral recurrent laryngeal nerve palsy.[2]

Lung cancer is the leading cause of cancer death worldwide.[4] Small cell lung cancers (SCLC) account for 13% of all lung cancers.[5] Smoking is strongly linked to SCLC, which often affects older males. Due to its characteristics of rapid progression and dissemination before its initial diagnosis, SCLC has the poorest prognosis among all the lung malignancies.[6] It is a highly aggressive and poorly differentiated neuroendocrine carcinoma. On microscopy, histopathological features of SCLC include diffuse sheets of small round cells with sparse cytoplasm and inconspicuous nucleoli. As these cells are flat with scanty cytoplasm, they are also called as small 'oat cell' carcinoma of lung.

Typically, the primary tumor is modest, whereas the metastasis is quite massive. SCLC arises from the bronchus and is thus usually central in location. They present as mediastinal or hilar lymphadenopathy in 92% or 84% of patients, respectively..[7] A bout 68% of patients had encasement of mediastinal structures like trachea, esophagus, heart, vessels especially the superior vena cava.[8] For the clinical staging of SCLC, the modified Veterans' Administration Lung Study Group (VALSG) two-stage classification system has been often employed.[9] It is classified as either limited-stage SCLC (LS-SCLC) or extensive-stage SCLC (ES-SCLC). According to this modified classification, as there is contralateral mediastinal lymph nodal involvement in our case, it is still classified as limited stage (LS).

Dysphagia and hoarseness can develop from invasion of the oesophagus and mediastinal structures (such as the recurrent laryngeal nerve and trachea), respectively.[8] According to the available literature, mediastinal lymphadenopathy accounts for 0.45% of all unilateral recurrent laryngeal nerve palsies.[2] SCLCs which are the most aggressive neuroendocrine lung tumor, show distinct imaging characteristics of mediastinal or hilar lymphadenopathy.[3,7]

Recurrent laryngeal nerve is a branch of tenth cranial nerve which is Vagus nerve. Left recurrent laryngeal nerve has a longer course as it loops around the arch of aorta compared to the right recurrent laryngeal nerve that loops around left

subclavian artery. As a consequence of its longer route and its close proximity with mediastinal structures, it is more prone for injuries anywhere along its course. Recurrent laryngeal nerve gives sensory supply to glottis and sub- glottic region. It gives motor supply to all the intrinsic muscles of larynx except cricothyroid muscle. Cricothyroid muscle is an adducting muscle supplied by superior laryngeal nerve. Posterior cricoarytenoid is the main abducting muscle of vocal cord which is supplied by recurrent laryngeal nerve. Recurrent laryngeal nerve palsy causes paralysis of posterior cricoarytenoid muscle which in turn causes hoarseness of the voice.[1,5]

For a precise diagnosis and appropriate treatment, early recognition of the underlying causes of unilateral vocal cord paralysis is crucial from a therapeutic standpoint. This requires an understanding of the imaging features of SCLC and the correlation of the findings with the clinical symptoms. Treatment of SCLC includes a combination of early thoracic irradiation along with chemotherapy.

CONCLUSIONS

Unilateral recurrent laryngeal nerve palsy serves as an important sign for various underlying diseases. The etiology is our case was compression of left recurrent laryngeal nerve by enlarged mediastinal lymph nodes in aorto-pulmonary window. Extensive mediastinal lymphadenopathy was secondary to metastasis from the spiculated pulmonary lesion in right lung which was proved to be small cell lung cancer (SCLC) on histopathology. Small cell lung cancer is known to cause widespread mediastinal lymph node metastasis which should rise the suspicion for left vocal cord palsy. Understanding the imaging manifestations of SCLC and correlating these findings with the clinical symptoms are necessary for accurate diagnosis and treatment.

REFERENCES

1. Williamson AJ, Shermetaro C. Unilateral Vocal Cord Paralysis. [Updated 2022 Aug 19]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan. Available from: https://www.ncbi.nlm.nih.gov/books/NBK535420/
2. Gandhi S, Bhatta S, Bhowmick N Etiology of unilateral vocal cord paralysis: A 16-year retrospective review. Journal of Laryngology and Voice. 2021 Jan 1;11(1):12.
3. Lee D, Rho JY, Kang S, Yoo KJ, Choi HJ. CT findings of small cell lung carcinoma: can recognizable features be found?. Medicine. 2016 Nov;95(47).
4. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. CA: a cancer journal for clinicians. 2011 Mar;61(2):69-90.
5. Paquette CM, Manos DC, Psooy BJ. Unilateral vocal cord paralysis: a review of CT findings, mediastinal causes, and the course of the recurrent laryngeal nerves. Radiographics. 2012 May;32(3):721-40.
6. Raso MG, Bota-Rabassedas N, Wistuba II. Pathology and Classification of SCLC. Cancers. 2021 Feb 16;13(4):820.
7. Chong S, Lee KS, Chung MJ, Han J, Kwon OJ, Kim TS. Neuroendocrine tumors of the lung: clinical, pathologic, and imaging findings. Radiographics. 2006 Jan;26(1):41-57.
8. Carter BW, Glisson BS, Truong MT, Erasmus JJ. Small cell lung carcinoma: staging, imaging, and treatment considerations. Radiographics. 2014 Oct;34(6):1707-21.
9. Kalemkerian GP. Staging and imaging of small cell lung cancer. Cancer imaging. 2011;11(1):253.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 10-01-2023; **Accepted:** 14-02-2023; **Published online**: 30-03-2023