

Superior Venacaval Obstruction in Lung Carcinoma

Sreenivasa Rao Sudulagunta^{1*}, Shyamala Krishnaswamy Kothandapani² and Mahesh Babu Sodalagunta³

¹Columbia Asia Hospital, India

²Dr. B R Ambedkar medical College, India

³KS Hegde Medical College, India

Article Information

Received date: Jun 17, 2015

Accepted date: Jul 10, 2015

Published date: Sep 22, 2015

*Corresponding author

Sreenivasa Rao Sudulagunta, Columbia Asia Hospital, India, Tel: 8147572745; Email(s): dr.sreenivas@live.in (or) drsreenivasarao@gmail.com

Distributed under Creative Commons CC-BY 4.0

Keywords Lung carcinoma; Pancoast Tumor; Superior vena caval syndrome; Thoracic outlet syndrome

Key Messages Patient presenting with facial puffiness and pain in the shoulder should be evaluated for the possibility of all causes of superior vena caval obstruction. Pancoast tumor should be ruled out as survival reduces with delayed treatment. 5 year survival rates of pancoast tumor range from 15 to 56%.

Abstract

We report a case of Pancoast tumor with Superior vena cava obstruction and thoracic outlet syndrome in 60 year old patient who has been diagnosed to have undifferentiated lung carcinoma on evaluation. Patient was a chronic smoker from 40 years on treatment for chronic obstructive pulmonary disease and presented with hoarseness of voice, puffiness of face, pain in right arm and chest.

Chest radiography and computerized tomography of thorax showed homogenous density in right upper lobe extending in to superior mediastinum with involvement of multiple groups of lymphnodes. CT guided biopsy confirmed diagnosis of undifferentiated large cell carcinoma. Patient developed clinical features of superior vena caval obstruction in a period of 15 days.

Introduction

Lung cancer is the fifth common cancer in India with 63,000 new cases detected per year [1]. Predominantly occurrence is noted in men and smokers [2]. Undifferentiated lung carcinoma constitutes about 5-10% of lung cancers [3]. Pancoast tumor is characterized by a malignant neoplasm of superior sulcus of the lung with destructive lesions of thoracic outlet and involvement of brachial plexus and cervical sympathetic nerves [4]. Superior Vena Cava Syndrome (SVCS) is characterized by gradual, insidious compression/obstruction of the superior vena cava [5].

Case History

A 60 year old male patient, labourer by occupation presented with pain in right shoulder from a period of 1 month. Patient described pain as severe grade 10/10 radiating from shoulders to fingers associated with tingling, numbness and heaviness of arm. Patient complains of hoarseness of voice and puffiness of face and neck from 15 days. Diurnal variation of puffiness was present. Patient consulted general physician and took treatment but, it did not relieve his pain. He was on medications tramadol and gabapentin. Past medical history is significant for tobacco usage (smoking and chewing) since 40 years. On physical examination patient had severe pain on holding his right hand. Edema of hand, face and neck was observed.

Patient had engorged veins over upper chest. (Figure 1) Patient could not make a fist with right hand. Eye examination was normal except for ptosis in right eye. Power is reduced in right trapezius muscle, shoulder, elbow and wrist. Muscle tone is difficult to assess due to pain. Sensory level was at T4 for pinprick. Pemberton's sign was positive. Reflexes are present. Patient had 4 enlarged lymphnodes in right axilla and neck, 2×1 cm in size, firm in consistency, mobile, borders well made out, smooth surfaced. Laboratory tests were normal. Chest radiography showed parenchymal opacity in right apex. (Figure 2) Computerized tomography of thorax showed soft tissue mass in right upper lobe extending in to superior mediastinum with involvement of multiple groups of lymphnodes. (Figures 3,4,5 and 6) Computerized tomography guided biopsy showed undifferentiated large cell carcinoma. (Figures 7,8 and 9) Immunohistochemistry was positive for CD45 and S100. Patient was referred to oncology center.

Discussion

Superior vena cava syndrome was first described by William hunter in 1757 in a patient with aortic aneurysm caused by syphilis. Henry pancoast described pancoast tumor cases in 1924 and 1932. The tumor can cause compression of nearby vital structures causing a constellation of symptoms such as pancoast syndrome (includes horner's syndrome) and superior vena cava syndrome [5]. Lung cancer, particularly adenocarcinoma, is the cause in 70% of patients with SVCS [6-8]. However, as many as 40% of cases are due to non-malignant causes [9]. Pancoast tumors are fewer than 5% of lung cancers (1-3% in various previous series) [10-12]. Superior vena cava syndrome is found in 5-10% of lung cancers [13]. In our case patient developed features of pancoast tumor, superior vena



Figure 1: Superficial veins engorgement over chest.

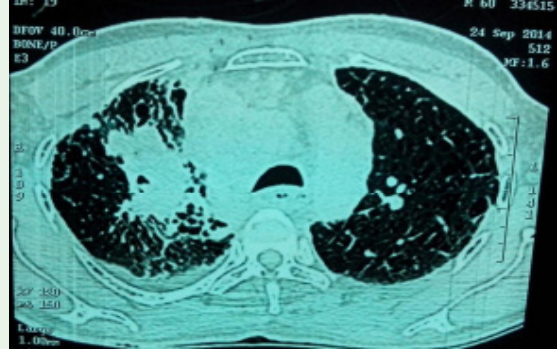


Figure 4: Computerized tomography of chest showing right upper lobe mass.

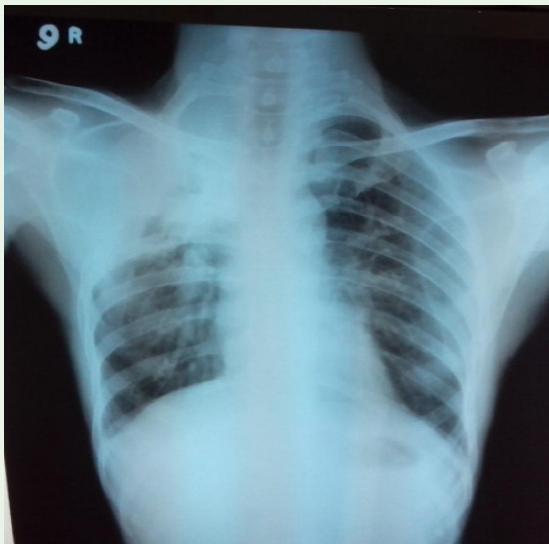


Figure 2: Chest Radiography showing Right upper zone opacity and fibrosis.

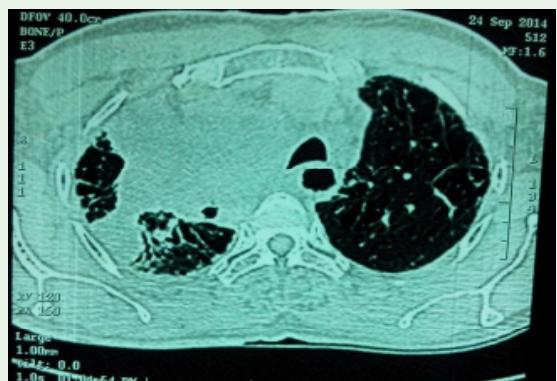


Figure 5: Computerized tomography of chest showing right upper lobe mass extending in to mediastinum.

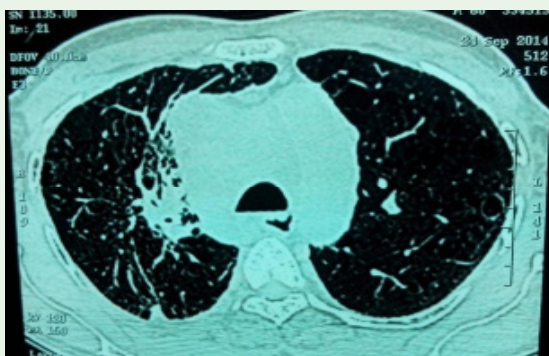


Figure 3: Computerized tomography of chest showing right upper lobe mass.



Figure 6: Fine needle aspiration cytology showing undifferentiated lung carcinoma.

cava obstruction and thoracic outlet syndrome which are rare. The duration of symptoms in our patient is only 15 days. Biopsy showed undifferentiated large cell carcinoma which accounts for less than 5% of lung cancers.

Patients with untreated malignancy causing superior vena cava obstruction survive only about 30 days. Even with treatment

90% of patients die within two and half years. 5 year survival rates of Pancoast tumor range from 15 to 56% [14-16]. In conclusion, patient presenting with facial puffiness and pain in the shoulder should be evaluated for the possibility of all causes of superior vena caval obstruction. Pancoast tumor should be ruled out as survival reduces with delayed treatment.

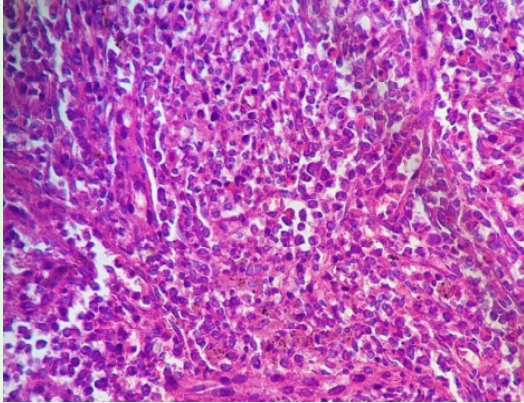


Figure 7: Fine needle aspiration cytology showing undifferentiated lung carcinoma.

References

- Noronha V, Dikshit R, Raut N, Joshi A, Pramesh CS, George K, et al. Epidemiology of lung cancer in India: Focus on the differences between non-smokers and smokers: a single-centre experience. *Indian J Cancer*. 2012; 49: 74-81.
- <http://www.ons.gov.uk/ons/rel/vsob1/cancer-statistics-registrations--england--series-mb1-/index.html>.
- Waun Ki Hong, Robert C Bast, Donald W Kufe, Raphael E Pollock, Ralph R Weichselbaum, James F. Holland, et al. "78: Cancer of the Lung". Holland-Frei Cancer Medicine. People's Medical Publishing House. 8th edn. ISBN 978-1-60795-014-1. 2010.
- Pancoast HK. Superior pulmonary sulcus tumor: Tumor characterized by pain, Horner's syndrome, destruction of bone and atrophy of hand muscles. *JAMA*. 1932; 99: 1391-1396.
- National Cancer Institute. Cardiopulmonary syndromes. 2005
- Flounders J. Superior vena cava syndrome. *Oncol Nurs Forum*. 2003; 30: E84-E88.
- Ahmann FR. A reassessment of the clinical implications of the superior vena caval syndrome. *J Clin Oncol*. 1984; 2: 961-969.
- Hassikou H, Bono W, Bahiri R, Abir S, Benomar M, Hassouni NH. Vascular involvement in Behçet's disease. Two case reports. *Joint Bone Spine*. 2002; 69: 416-418.
- Hunter W. The history of an aneurysm of the aorta with some remarks on aneurysms in general. *Med Obs Enq*. 1757; 1: 323-357.
- Mitchell DH, Sorrell TC. Pancoast's syndrome due to pulmonary infection with *Cryptococcus neoformans* variety *gattii*. *Clin Infect Dis*. 1992; 14: 1142-1144.
- Ginsberg RJ, Martini N, Zaman M, Armstrong JG, Bains MS, Burt ME, et al. Influence of surgical resection and brachytherapy in the management of superior sulcus tumor. *Ann Thorac Surg*. 1994; 57: 1440-1445.
- Johnson DE, Goldberg M. Management of carcinoma of the superior pulmonary sulcus. *Oncology (Huntingt)*. 1997; 11: 781-785; discussion 785-786.
- Salsali M, Clifton EE. Superior venacaval obstruction in carcinoma of lung. *N Y State J Med*. 1969; 69: 2875-2880.
- Detterbeck FC. Pancoast (superior sulcus) tumors. *Ann Thorac Surg*. 1997; 63: 1810-1818.
- Arcasoy SM, Jett JR. Superior pulmonary sulcus tumors and Pancoast's syndrome. *N Engl J Med*. 1997; 337: 1370-1376.
- Komaki R, Roth JA, Walsh GL, Putnam JB, Vaporciyan A, Lee JS, et al. Outcome predictors for 143 patients with superior sulcus tumors treated by multidisciplinary approach at the University of Texas M. D. Anderson Cancer Center. *Int J Radiat Oncol Biol Phys*. 2000; 48: 347-354.