Case Report

Chylothorax with superior vena caval syndrome as the initial presentation of squamous cell lung cancer: A case report and review of literature

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ABSTRACT

Chylothorax is a rare complication in patients of lung cancer developing usually after cardiothoracic surgery or radiotherapy to chest. Chylothorax as an initial presentation is a rare manifestation of lung cancer. We report a case of squamous cell carcinoma of lung diagnosed after patient with features of superior vena caval (SVC) syndrome was placed on intercostal drainage tube and frank milky white fluid appeared. SVC syndrome was managed with hypofractionated radiotherapy to the mediastinum. However, chylothorax resolved only after two cycles of chemotherapy. A review of available literature on this rare association is also discussed along with.

Key words: Chylothorax, lung cancer, squamous cell carcinoma, superior vena cava syndrome

INTRODUCTION

Chylothorax is a rare presentation which may develop due to trauma to the thoracic duct (iatrogenic or accidentional), congenital malformation of lymphatic system, lymphadenitis, lymphoma, or radiotherapy to thorax. Overall incidence of chylothorax is about 0.3-2.4%, respectively.[1-3] The thoracic duct transports 3.5-4 L of lymphatic fluid per day. Thus, if there is tear or leakage in the duct, it may cause rapid accumulation of large amount of fluid in the pleural cavity. If a postsurgical patient on chest tube is having drainage of 400-600 cc/8 h period, it is of concern to be chylous leak. The malignant causes are the most frequent etiologies, classified into lymphomatous and nonlymphomatous. Lymphoma alone accounts for about 60% of all cases, with higher probability associated with nonHodgkin lymphoma; miscellaneous etiologies include cirrhosis, tuberculosis, filariasis, sarcodiasis, and amyloidosis. We report a rare case of lung carcinoma presenting with chylothorax along with SVC syndrome.

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CASE REPORT

A 35-year-old male presented with 2 months history of dyspnea, heaviness of left chest wall, facial puffiness, chest pain, and cough. He was a known heavy smoker for 13 years and also chronic alcoholic. On examination, respiratory rate was 28/min and chest veins were engorged. On auscultation, breath sounds were diminished in the left side of the chest. Chest X-ray showed a round opacity in the left upper lobe (LUL) and moderate pleural effusion. To relieve the symptoms, intercostal drainage tube was inserted in the triangle of safety of the left side under aseptic precautions. One liter of absolutely milky white fluid was drained after which the tube was clamped, further fluid drainage was done at the rate of 250 ml/h. Total fluid after which there was drastic improvement in symptoms. The cytological analysis failed to reveal any malignant cells. The biochemistry of fluid showed triglyceride, 867 mg/dl; lactate dehydrogenase, 332 IU/l; and carcinoembryonic antigen, 6.16 ng/ml. Computed tomography scan demonstrated heterogeneous enhancing

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soft tissue density mass lesion of size 96 × 96 × 100 mm seen in LUL extending to whole mediastinum encasing all major vessels, including arch of the aorta, descending aorta, trachea, esophagus, and pulmonary trunk [Figure 1]. The lesion also caused significant luminal narrowing of left main bronchus. Heterogeneous attenuated right lung field was seen due to mosaic perfusion. Multiple paraesophageal, supraclavicular, superior mediastinum, pre, paratracheal, subcarinal and aortopulmonary window lymphadenopathy were seen, larger measuring approximately 18 mm size. Bronchoscopic biopsy from the lesion revealed eosinophilic cytoplasm with distinct cell borders and intercellular bridges characteristic for a squamous cell carcinoma (SCC) [Figure 2]. On immunohistochemistry, the tumor cells stained positive for cytokeratin 5/6, epithelial membrane antigen and p63 while negative for thyroid transcription factor and vimentin, thus confirming the origin to be SCC of lung. The clinical stage was T4N3M0 stage IIIb. Therefore, SCC of the lung complicated by chylothorax and SVC syndrome was diagnosed. Injection cyclophosphamide 1 g infusion was given through canula in lower limb; palliative radiotherapy to mediastinum was planned 30 Gy (300 cGy/fraction, 5 days a week) delivered over 2 weeks. The symptoms of SVC syndrome improved; however, there was still drainage of about 250-300 ml chylous fluid in the ICD tube. After 2 weeks of rest chemotherapy with injection paclitaxel 175 mg/m^2 day 1 and cisplatin 100 mg/m^2 divided in day 1 and 2 was given. The patient is on follow-up and it is planned to give total six cycles of same chemotherapy at 3 weeks interval is planned.

DISCUSSION

Chylothorax is a relatively complication of cardiothoracic surgeries, the incidence being 0.2-4%. However, it's quite rare in patients of lung cancer at presentation without any history of surgery or radiotherapy. Other important cause of chylothorax in patients of lung cancer includes radiotherapy induced fibrosis leading to diminished lymphatic circulation and thus, its leakage in to pleural cavity.[4-6] This complication of radiation treatment is also observed in many disease such as Hodgkin lymphoma (mantle field technique), SCC in esophagus, breast carcinoma, and also lung carcinoma.[4-7] The patient under discussion was suffering from lung cancer with two complications presenting simultaneously, SVC syndrome and chylothorax. The causal relationship between lung cancer and chylothorax may be ascribed to compression of thoracic duct leading to increased press and it rupture.[8] Another cause of chylothorax in this patient could be SVC obstruction causing back pressure over thoracic duct, this causing of cycle in to the pleural space.[9-11] Dahlbäck *et al*. have reported SCC of lung cancer present with thoracic duct fluid in pleural cavity and nodular deposition.[12] All cases presented with right side lung carcinoma. Pleural fluid cytology revealed malignant cell. The main dominant feature in case is chylothorax and its presence in mainly right pleural space. However, in our patient, chylothorax developed in left pleural cavity and malignant cells were absent. A study by Rungta and Jha [13] reported that the measurement of pleural cholesterol and lactate dehydrogenase (LDH) permits the separation of pleural exudates from transudates with accuracy similar to the conventional Light's criteria, with the advantage of requiring only two laboratory determinations and no simultaneous blood sample, especially in a country like India where financial and technical constraints are immense. The high levels of pleural cholesterol and LDH in our patient confirmed the exudative nature of the pleural fluid.

Treatment of chylothorax is frequent aspiration of pleural fluid, low fatty diet, intercostal tube drainage, and pleurodesis with chemical substance.[8,14] Surgical management of chylothorax is thoracic duct ligation and pleuroperitonial shunt mainly used when milky colored fluid is more than

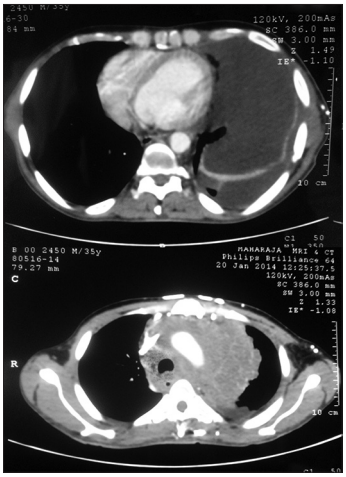

Figure 1: Computed tomography scan showing effusion in left pleural space (top panel) and heterogeneous enhancing soft tissue density mass lesion in left upper lobe extending to whole mediastinum encasing all major vessels (bottom panel)

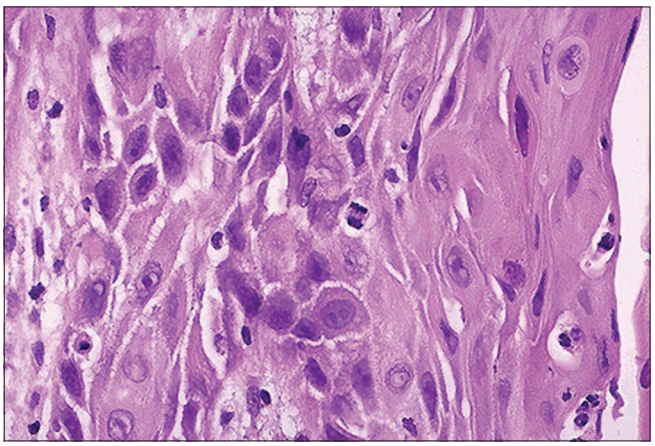

Figure 2: Photomicrograph showing eosinophilic cytoplasm with distinct cell borders and intercellular bridges characteristic for a squamous cell carcinoma (H and E, ×400)

550 ml or continues or more than 14 days. In Dahlbäck *et al*., study, two cases were successfully treated with chemical pleurodesis. If chylothorax is associated with clot in brachiocephalic, subclavian or jugular vein, it is treated with anticoagulant therapy. Beghetti *et al*., studied resistant cases of chylothorax associated with superior vena cava syndrome manage with chemotherapy.[10] In our case also, chemotherapy led to resolution of chylothorax. Thrombus in superior vena cava can be treated by correction of underlying cause. Nakano *et al*., have reported OK-432, a Su-strain of *Streptococcus pyogenes* to be highly effective in patients with persistent chylothorax not responding to conservative management.[15]

CONCLUSIONS

Chylothorax is a rare presentation of lung cancer without any previous history of surgery or radiotherapy. However, clinician should include lung cancer as a differential diagnosis in the patients of chylothorax to make correct and timely diagnosis.

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