

Case Report

Superior Venacava Obstruction syndrome secondary to bronchogenic carcinoma

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Abstract

Superior vena cava (SVC) syndrome is almost exclusively associated secondary to malignancy. In the preantibiotic era, infection was the most common cause. Other important causes included hypercoagulability and thrombosis. The diagnosis can be made with the typical symptoms and signs associated with it, nonetheless imaging with computed tomography or magnetic resonance imaging is needed to confirm the diagnosis. We present here a case of SVC obstruction secondary to bronchogenic carcinoma of the lung. The patient received chemotherapy and radiation therapy which relieved his symptoms. The patient died three months later from brain metastasis.

Keywords: Carcinoma; Catheter; Chemotherapy; Superior vena cava; Thrombosis

1. Introduction

Superior vena cava (SVC) syndrome is a condition resulting from obstruction of venous blood flow from the superior vena cava into the right atrium of the heart. The vessel wall of the veins in the body have very thin muscular layer compared to arteries which have a well developed muscularis which makes them flexible. This flexibility coupled with low intravascular pressure makes them very prone to extrinsic compression. The SVC obstruction results in increases in venous pressure leading to retrograde flow in collateral veins, increased hydrostatic pressure in the intravascular compartment causes interstitial edema in the arm, head and neck regions. The patients present with typical signs and symptoms of facial neck and upper limb edema associated with cough, shortness of breath, hoarse voice, neck and thoracic collateral veins distension. We present here a case of bronchogenic carcinoma of the right lung presenting as SVC syndrome.

2. Case Report

A 65 year old male arrived to the ER with swelling of the face and right upper limb since the past one month. He had developed cough and increased breathlessness for the past two days. The patient had been diagnosed as pulmonary tuberculosis and started on anti tubercular drugs, four months back. The patient was hospitalized for further management.

Physical examination revealed plethora and edema of the face, upper part of chest and right upper limb. There were multiple engorged veins over the neck and chest. Blood pressure in right upper limb was 164/90 mm of Hg, left upper limb 134/82 mm of Hg and lower limb was 114/80 mm of Hg. On respiratory system examination breath sounds were decreased with dull percussion note in right supraclavicular, mammary and axillary areas of lung fields. Examination of other systems yielded normal results.

Complete haemogram showed leukocytosis with neutrophil predominance and raised erythrocyte sedimentation rate. Liver and kidney function tests were normal. Computed tomography of chest with contrast showed a 12.5 by 12.5 by 12 cm large ill defined heterogeneously enhancing mass infiltrating into the anterior and middle mediastinum causing invasion and obstruction of the right main bronchus encasing the right main pulmonary artery, superior venacava and distal part of trachea. There was complete collapse of the right lung with gross pleural effusion. Mediastinal, upper abdominal and neck lymphadenopathy were seen with multiple hypodense lesions in the liver. A diagnosis of bronchogenic carcinoma with extensive metastasis with TNM staging T4N3M1b was made.

The patient and his relatives were explained about the medical condition, the prognosis and treatment options available. The patient decided to continue further management at an exclusive oncology hospital which was the regional center.

The patient received chemotherapy and radiation therapy at a specialty cancer hospital after which his symptoms subsided. The patient received three more cycles of chemotherapy along with palliative care for the next three months after which he died from brain metastasis.

3. Discussion

SVC syndrome was first described by Scottish physician William Hunter in 1757 in a patient named Mr. Bradwell who died at the age of 39. On his postmortem, a large syphilitic aortic aneurysm compressing the SVC was observed¹.

This syndrome had been associated in the early days with infections like syphilitic aortic aneurysm or tuberculosis with lymphadenopathy.^{2,3,4}

But over the years with the advent of effective antimicrobial drugs, malignant tumors that directly invade the vein or cause an extrinsic mass effect have become the commonest cause of SVC syndrome. Neoplasms of the lung, breast, mediastinal lymphomas among others are the common causes of SVC syndrome⁵, with adenocarcinoma of the lung being the most common cause⁶. Nonetheless 40% of the causes of SVC syndrome are nonmalignant.

SVC syndrome is also seen secondary to venous thrombosis because of the increasing use of pacemakers and central venous catheters in intensive care units for monitoring and treatment of critically ill patients^{7,8}. It has also been reported secondary to endocardial defibrillator, pacemaker leads^{9,10}, and dialysis catheters.^{11,12}

Gradual compression of the superior vena cava either extrinsically or intrinsically leads to blocking of the venous return from the upper part of the body leading to retrograde flow and increased hydrostatic pressure in the part of vein proximal to obstruction leading to extravasation of fluid to the extravascular compartment causing edema of the face and right upper limb. Development of collateral circulation causes dilatation of superficial veins in the upper part of the body. Other symptoms include dyspnea, cough, dysphagia and discoloration of the face and upper extremities which develop over a period of time. Sudden SVC obstruction can be seen when thrombosis is the etiology especially iatrogenically induced thrombosis secondary to catheters^{13,14}.

SVC syndrome is most frequently encountered in patients with malignancies. Patients present with typical constellation of symptoms like shortness of breath along with facial and upper extremity edema. Radiation therapy combined with chemotherapy is the mainstay of treatment for most patients. Since such patients have advanced carcinoma palliative care should be the focus of treatment.

**Figure 1: a) Collateral venous circulation in the back
b) CT Scan of the chest showing right lung mass compressing the superior venacava**

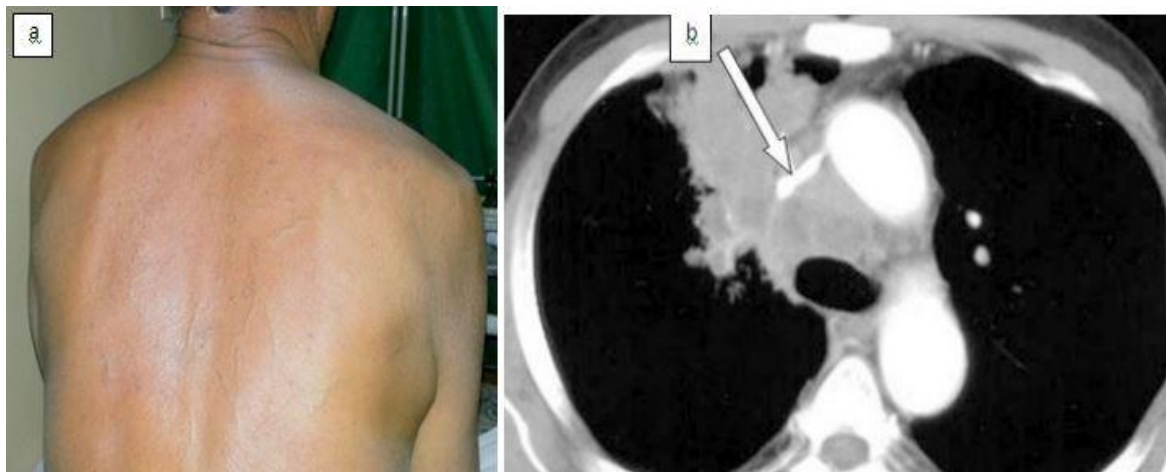


Figure 2: a) Swelling of the face and the neck. b) Swelling of the right upper limb



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