Tumor mass in the lung with superior vena cava syndrome

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SUMMARY

Group of symptoms due to vena cava superior obstruction is named superior vena cava syndrome. A 65-year-old female, long-standing smoker was presented with a two-week history of dry cough and facial swelling. The patient noticed a palpable mass on the right side of the neck. Computer tomography scan with contrast showed extensive, irregular, non-homogenous consolidation in the right upper lobe, involving the right hilus, surrounding the aortic arch, supra aortic branches and pleural effusion at the right side of the body. Also, ultrasound examination of supra clavicular space showed enlarged pathologic hypoehogenic lymph node without an echogenic hilum. Ultrasound guided fine needle biopsy of lymph node was performed, and cytopathology findings showed metastatic lesion from primary microcellular lung cancer, IIIC stadium, cT4N3M0. Venous angioplasty was performed showing stenosis in the superior vena cava. After balloon dilatation, the stent was placed at the site of stenosis. The patient received chemio- and radiotherapy and survival time was seven months. Superior vena cava syndrome is an urgent clinical condition, and lung cancer is the leading cause of this syndrome. Computer tomography imaging findings and endovascular stent placement are important for detection and management of the superior vena cava thrombosis.

KEY WORDS: *lung cancer; vena cava superior; syndrome*

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INTRODUCTION

Group of symptoms due to *vena cava* superior obstruction is named Superior vena cava (SVC) syndrome or Mediastinal syndrome. Features of this syndrome are: edema of the face, neck and arms, enlarged collateral veins of the chest wall, dyspnea, cough and other.

All of these symptoms and signs are caused by obstruction of *vena cava* superior. Obstruction can occur due to malignant and non-malignant causes. In this Case report tumor mass in the lung with Superior vena cava syndrome was presented.

CLINICAL HISTORY

A 65-year-old female, long-standing smoker was presented with a two-week history of dry cough and facial swelling. The patient noticed a palpable mass on the right side of the neck. She had no febrile episodes. Pemberton's maneuver was positive and laboratory findings of lactate dehydrogenase (LDH) were elevated.

IMAGING RESULTS

Chest X- rays radiograms showed irregular homogenous consolidation in the right upper lobe of the lung. There was also mediastinal involvement with increased shading in the right diaphragm and costodiaphragmatic sinus (Figure 1). Computer tomography (CT) scan with contrast showed extensive, irregular, non-homogenous consolidation in the right upper lobe, involving the right hilus, surrounding the aortic arch and supra aortic branches and pleural effusion in the right side (Figure 2). Also, there was thrombosis and stenosis of the superior vena cava with the presence of a large solid supraclavicular lymph node on the right side. Ultrasound examination of supraclavicular space showed enlarged pathologic hypoehogenic lymph node without an echogenic hilum. Ultrasound guided fine needle aspiration (FNA) was performed, and cytopathology findings showed metastatic lesion from primary microcellular lung cancer, stadium IIIC, cT4N3M0. Venous angioplasty was performed showing stenosis in the SVC (the first type of Stanford classification). After balloon dilatation, the stent was placed at the site of stenosis of SVC and symptoms disappeared within 24 h. Chest X-rays showed an intravascular stent in the projection of SVC (Figure 3). Due to thrombosis our patient received low-molecular--heparin (anticoagulant therapy can be associated with a risk of peri-interventional bleeding)

Differential diagnosis was: lymphoma, teratoma, thymoma, and lung metastasis.

DISCUSSION

Superior vena cava syndrome could be caused by benign or malignant processes. External compression from the different tumor mass and pathologic process, stenosis, and thrombosis lead to vein obstruction (1, 2, 3).

Clinical symptoms primarily include facial and neck swelling, dyspnea, chest pain, cough, rarely headache and hoarseness. These groups of patients with SVC syndrome require urgent clinical and diagnostic evaluation, and treatment (4). Some types of nonmalignant lesions that can cause SVC syndrome are fibrosis, vasculitis, teratomas, tuberculosis or cardiac diseases. Lung cancer is the leading cause of malignant SVC syndrome, with non-Hodgkin lymphoma being common too. Rarely the cause of this condition can be metastatic cancer, Hodgkin disease or mediastinal leiomyosarcomas (3, 5). SVC syndrome is present in about 60 % of undiagnosed malignancies (6, 7) and 2-4% is present in patients with lung cancer during a period of the disease (7, 8).

Taken together with anamnestic and clinical data, CT scan with contrast is a very important diagnostic modality that can confirm SVC syndrome and type of obstruction. More accurate data on the degree of luminal stenosis and the percentage of involvement can be given by venography. Radiology stages of SVC obstruction are classified using Standford classification system that is giving more detail about the intraluminal patency of the SVC (9). Some noninvasive techniques that can be used in the diagnosis of lung malignancies with consequent SVC syndrome are biopsy of lymph node, pleural fluid or sputum cytology. Invasive methods include thoracoscopy and bronchoscopy.

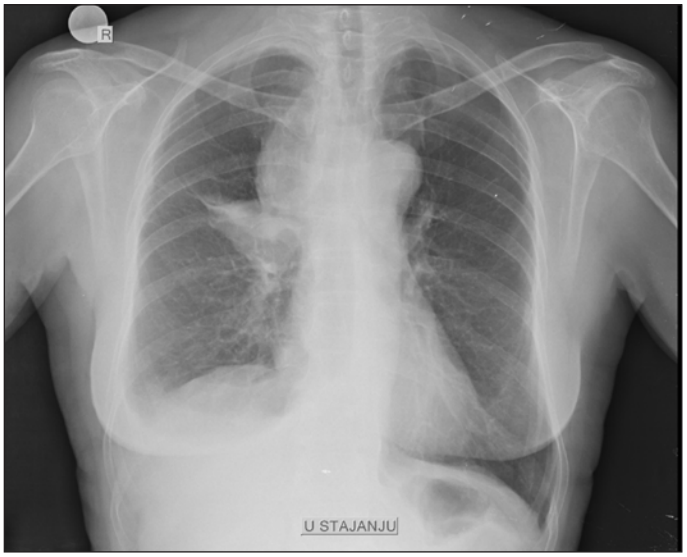

Figure 1. Increased shading in the right diaphragm and costo-diaphragmatic sinus

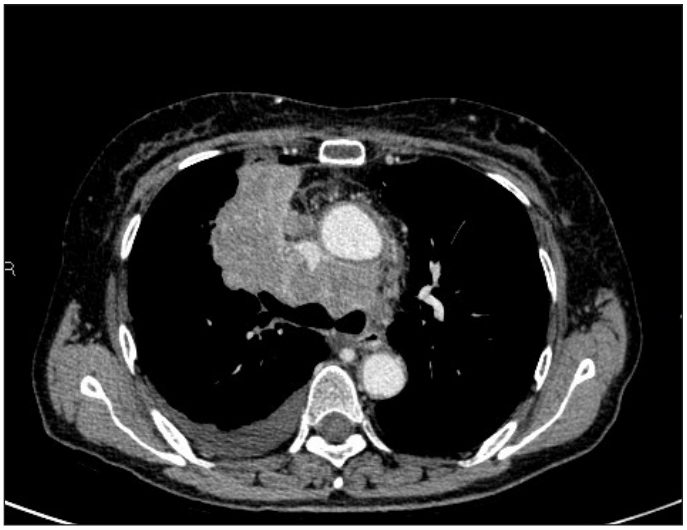

Figure 2. CT of the thorax: Extensive, irregular, non-homogenous consolidation in the right upper lobe

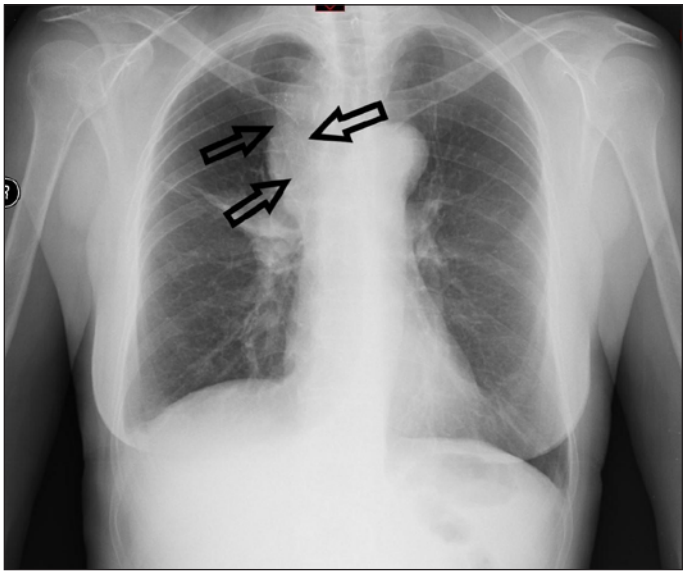

Figure 3. Chest X-ray: Intravascular stent in the projection of SVC

The treatment depends on a type of malignancy and disease extensions. Also, ECOG performance status is important since chemio-, radiotherapy and stent placement are performed only in case of ECOG performance status 0 and 1. Radiation therapy and chemotherapy are traditional curative treatments of malignant SVC syndrome. Treatment is effective in 90% of cases. However, clinical results might not appear for days. Recurrence rate is around 20%, even when the maximum permissible dose of radiation is used. Oncology commission indicates first, urgent radiation therapy in five fractions (25 Gy), then chemotherapy with cisplatin/etoposide in VI sessions. Our patient received all VI sessions of chemotherapy. The endovenous treatment of SVC with stent placement is used in case of life-threatening symptoms. This type of recanalization provides immediate symptomatic relief of vein thrombosis in patients with a terminal stadium of the disease (6, 7, 10, 11). At the terminal stage the survival time ranges from 3 to 6 months (10, 11). Our patient's survival time was 7 months. that is in line with endovascular management of SVCS of Vascular and Endovascular Surgery Service of Brazilian University hospital where they managed 28 patients between 2002 and 2012 (11).

CONCLUSION

SVC syndrome is an urgent clinical condition, Lung cancer being the leading cause of this syndrome. CT imaging findings and endovascular stent placement are important for detection and management of the SVC thrombosis.

Declaration of Interests

Authors declare no conflicts of interest.

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