

# Anaplastic Thyroid Carcinoma (ATC) with Superior Vena Cava (SVC) Syndrome, Cardiac Tamponade and Pleural Effusion: An Unusual Clinical Presentation

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## ABSTRACT

Superior vena cava (SVC) syndrome and cardiac tamponade are potentially life-threatening conditions that are not uncommon in the oncological setting but their occurrence together in a patient is infrequent. Herein, we present a case of 50-year-old male who presented with SVC syndrome and pleural effusion; developed recurrent cardiac tamponade in the hospital. Fine needle aspiration cytology (FNAC) of left supraclavicular lymph node which appeared during hospital stay revealed high grade carcinoma and diagnosis of anaplastic thyroid carcinoma was established by FNAC of thyroid nodule. Despite rarity, clinicians must be aware of such presentation of thyroid malignancy.

**Keywords:** FNAC, Pericardial effusion, Pericardial tamponade, Thyroid malignancy

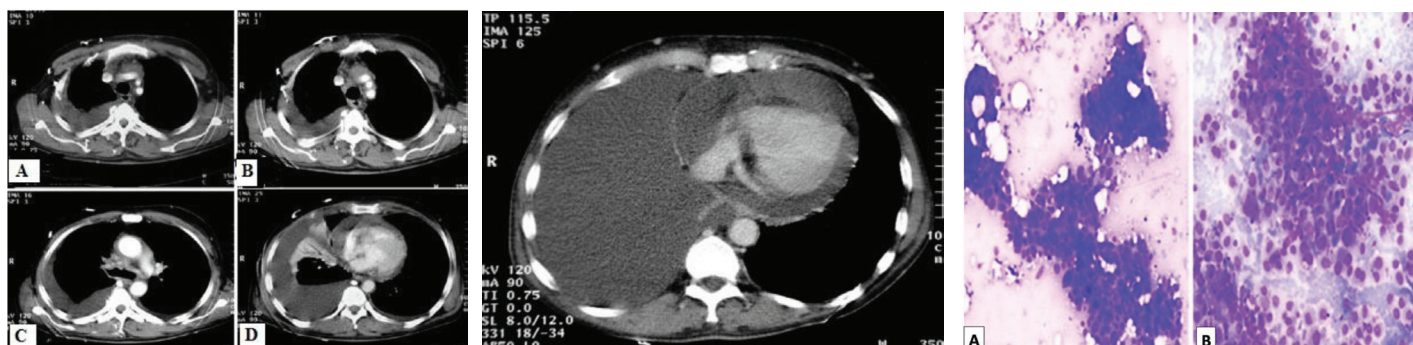
## CASE REPORT

A 50-year-old smoker male presented to medical emergency with 10 days history of breathlessness and one episode of hemoptysis which was not associated with fever or chest pain. He was nondiabetic and he did not have tuberculosis in the past. On examination, his pulse rate was 100 beats/min, blood pressure was 100/60 mmHg and respiratory rate was 28/min. There was fullness in neck and upper chest with nonpulsatile engorged jugular veins. On systemic examination, he had faintly audible heart sounds, stony dullness and decreased breath sounds in lower chest bilaterally. Abdominal and nervous system examination were unremarkable.

On investigation, his haemogram, LFTs, KFTs, serum electrolytes and ABG analysis were within normal limits. Chest X-Ray showed cardiomegaly & blunted right cardiophrenic angle and Echocardiography (ECG) showed low voltage complexes. Pleural fluid analysis showed 1000 cells/cumm (60% polymorphs & 40% lymphocytes), protein of 0.024g/L and sugar of 9.05 mmol/L. Pleural fluid was negative for malignant cells and ADA was 14. ECG showed pericardial effusion with features of cardiac tamponade. Sputum was negative thrice for acid fast bacilli. Bronchoscopic examination was completely normal. CECT chest showed evidence of SVC syndrome, pleural and pericardial effusion [Table/Fig-1A-D]. Pericardial tap was done and pig tail catheter was inserted for

drainage of pericardial fluid. Pericardial fluid was exudative with lymphocytic predominance and negative for gram stain, AFB and malignant cells.

In view of this clinical presentation and tests for bronchial carcinoma being unrewarding, patient was specifically investigated for other malignancies including prostate carcinoma and bowel malignancies. Thyroid function was normal with TSH of 1.3 mIU/L. Bone marrow examination did not show any abnormality. Second CECT chest [Table/Fig-2] done a month after the first one showed massive pleural effusion, pericardial effusion and evidence of SVC syndrome; showing rapid progression of the disease. Pericardial tamponade developed thrice during the stay and every time pericardial tap was done. Pericardial window could not be made because of poor general condition of the patient. During hospital stay a hard left supraclavicular lymph node was detected and FNAC from this node was suggestive of metastatic high grade carcinoma. USG neck showed heteroechoic nodules in left lobe of thyroid with enlarged lymph node along jugular chain. FNAC from the thyroid nodule were suggestive of ATC [Table/Fig-3A,B]. Radiotherapy for treatment of SVC syndrome was denied in view of poor general condition. Patient was a poor candidate for surgery and also refused any further treatment. He died at home after one month of tissue diagnosis.



**[Table/Fig-1]:** Computer Tomography of chest showing progressive attenuation of superior vena cava with opening of collaterals, pericardial effusion and pleural effusion

**[Table/Fig-2]:** Computer Tomography of chest showing Pericardial effusion and massive pleural effusion with collapse of right lung

**[Table/Fig-3]:** FNAC smears. (A) FNAC from supraclavicular lymph node showing high cellularity comprising of dissociated and few clusters of highly pleomorphic cells. Giemsa stain  $\times 250$ . (B) USG guided FNAC from thyroid showed high cellularity; pleomorphic cells in loose clusters with frequent mitoses. Giemsa stain  $\times 400$

## DISCUSSION

Oncologic emergencies may occur in patients who are known to have cancer as well as in those patients who have no prior diagnosis of malignancy. Our case presented with clinical features of SVC syndrome & pleural effusion and developed recurrent cardiac tamponade during the hospital stay.

Almost 95% cases of SVC syndrome in published modern series are due to cancer; bronchogenic carcinoma being the most common cause followed by non-hodgkins lymphoma. [1]. Additional rare causes of this syndrome include germ cell neoplasms, metastatic breast cancer, colon cancer, Kaposi's sarcoma, esophageal carcinoma, fibrous mesothelioma, Bechet's syndrome, thymoma, substernal thyroid goiter, Hodgkin's disease and sarcoidosis [2].

Cardiac tamponade can result directly from the malignant process or it may be treatment related. Malignant involvement of pericardium is the most common reason for development of pericardial effusions in cases of malignancy. The most common tumors with cardiac metastatic potential are carcinoma of lung, breast, oesophagus, lymphoma, leukemia and malignant melanoma. Cardiac involvement is often a late finding in widespread malignancy. Hence, combination of cardiac tamponade and SVC syndrome is an unusual first presentation for any malignancy. However, one case each of adenocarcinoma lung, myxoid liposarcoma and malignant histiocytic lymphoma have presented with both SVC syndrome and cardiac tamponade [3-5].

Extensive literature search showed that the cases with SVC syndrome and pericardiac tamponade together in the same patient are not many and almost half of them are related to malignancy. Malignancy related causes of these uncommon findings together have been adenocarcinoma of lung, thymoma, angiosarcoma of right atrium, leiomyosarcoma of the SVC, liposarcoma, malignant histiocytic lymphoma of the heart. In majority of cases SVC syndrome and cardiac tamponade developed during different times. Few cases with SVC syndrome developed cardiac tamponade later either spontaneously or due to therapeutic intervention for SVC syndrome which included balloon dilatation or stenting [6-9].

ATC is an aggressive form of cancer which represents less than 2% of all thyroid cancers but accounts for 40% of deaths from thyroid cancers [10,11]. ATC generally occurs in people in iodine-deficient areas and in the setting of previous thyroid pathology (e.g., preexisting goiter, follicular thyroid cancer, papillary thyroid cancer). Female to male ratio is 3:1 [12]. Peak incidence occurs during the sixth to seventh decades of life [13]. ATC is believed to occur from a terminal dedifferentiation of previously undetected long-standing thyroid carcinoma (e.g., papillary, follicular) [12]. ATC typically presents with a rapidly growing neck mass and local invasion of adjacent structure is common. ATC shows early dissemination. The most common sites of distant spread include (in descending order) lung, bone and brain. Metastases (particularly in lung) are likely to be present at diagnosis in more than 50% of cases [14]. Thyroid function tests are usually normal as in our patient also.

## CONCLUSION

SVC syndrome and cardiac tamponade together in a patient is very rare and malignancy is an important cause of this condition. ATC could be a cause of this condition even if thyroid functions are normal.

## ABBREVIATION

SVC syndrome: Superior vena cava syndrome

FNAC: Fine needle aspiration cytology

ATC: Anaplastic thyroid carcinoma

## CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-chief of this journal.

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