Case Report

Anaplastic thyroid carcinoma presenting as bilateral pleural effusion

R. Sodhi, G. Sindhwani, S. Chandra[1], D. Anand[2]

Departments of Pulmonary Medicine, [1]Pathology, [2]Medicine, Himalayan Institute of Medical Sciences, Dehradun, Uttarakhand, India

ABSTRACT

Anaplastic thyroid cancer presenting as bilateral malignant pleural effusion is rarely reported. We present a case who presented solely with respiratory symptoms and subsequently found to be having bilateral malignant pleural effusion secondary to anaplastic thyroid cancer.

KEY WORDS: Anaplastic thyroid cancer, bilateral, malignant pleural effusion

Address for correspondence: Dr. Sindhwani, Department of Pulmonary Medicine, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Dehradun, Uttarakhand - 248 140, India. E-mail: girish_sindhwani@rediffmail.com

INTRODUCTION

Anaplastic thyroid cancers are undifferentiated tumors of the thyroid follicular epithelium.[1] Contrary to differentiated thyroid carcinomas like follicular and papillary carcinoma, anaplastic carcinomas carry grave prognosis with median survival of 6 months.[2] They metastasize early in the course of disease. Both regional and distant spread is present at the time of initial diagnosis in 90% of cases.[3] According to a study, distant metastases to pleura and pericardium was seen in 29 and 13% cases, respectively.[4] However, anaplastic thyroid cancer presenting as bilateral pleura effusion is rare. We report a case of a 44-year-old female with bilateral pleural effusion and pericardial effusion secondary to anaplastic carcinoma thyroid.

CASE REPORT

A 44-year-old, diabetic and hypertensive, nonsmoker female presented with history of progressively increasing dry cough and shortness of breath since 3 months and heaviness in chest since 1 month. She did not give history of fever, night sweats, or weight loss. On physical examination, she was afebrile and tachypneic. A hard-fixed swelling of 2 × 2 cm with normal overlying skin was found in right cervical region, which moved with deglutition. On systemic examination, breath sounds were found to be decreased on right side. Skiagram of chest revealed bilateral pleural effusion (right more than left) [Figure 1]. Her hemogram was normal except a slightly raised total leukocyte count (13,000/mm^3). Liver and renal functions were normal. Echocardiography was done which revealed mild pericardial effusion. Computed tomography (CT) of the chest showed bilateral moderate pleural effusion with mild pericardial effusion [Figure 2]. Ultrasonography of the neck revealed a hyperechoic, oval nodule in right lobe of thyroid. Thyroid functions were normal. Fine needle aspiration cytology (FNAC) of thyroid nodule revealed large cells with multinucleation and prominent nucleoli with presence of mitotic figures and absent colloid favoring anaplastic carcinoma [Figure 3]. Diagnostic thoracentesis revealed clear, amber-colored pleural fluid which was exudative in nature with low cell count. It was negative for acid-fast bacilli and bacteria on smear examination. Pleural fluid cytology revealed malignant cells arranged in three-dimensional (3D) ball clusters and groups [Figure 4]. Correlation with pleural fluid cytology revealed that the cells in thyroid FNA and pleural fluid were cytologically same. Pleural fluid thyroglobulin levels were not raised. Radioiodine tracer uptake revealed poor uptake of radiocontrast further confirming anaplastic nature. Consequently, she was diagnosed as anaplastic thyroid carcinoma with metastatic bilateral pleural and pericardial effusion.

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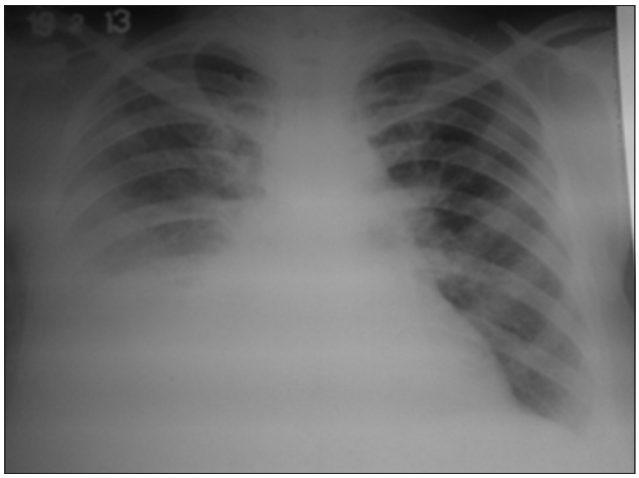

Figure 1: Chest X-ray showing bilateral pleural effusion (right more than left)

Figure 2: Computed tomography of chest showing bilateral pleural effusion (right more than left) with pericardial effusion

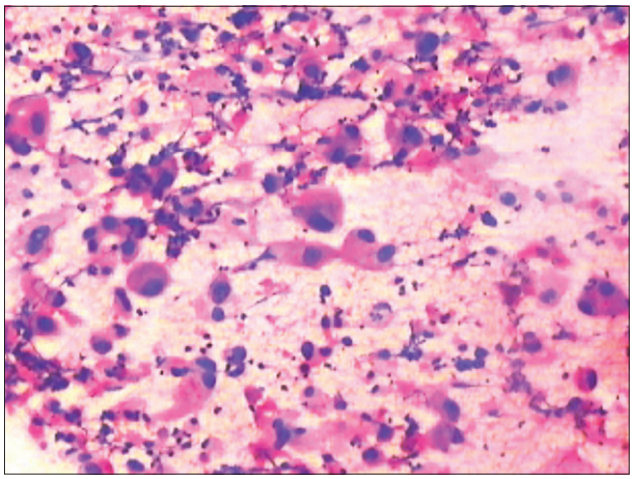

Figure 3: Fine needle aspiration cytology of thyroid showing anaplastic carcinoma comprising of highly pleomorphic cells with necrosis and inflammatory cells (H and E, ×100)

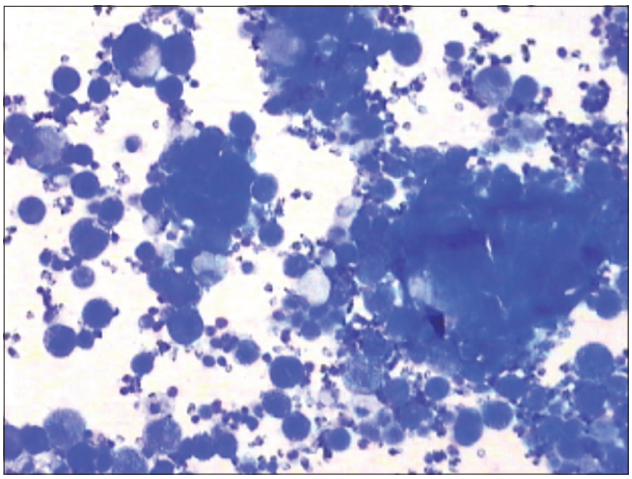

Figure 4: Pleural fluid cytology revealed malignant cells arranged in three-dimensional (3D) ball clusters and groups (Giemsa, ×100)

She was referred to the department of oncology for management.

DISCUSSION

Bilateral effusions are usually transudative in nature caused by cardiac, hepatic, renal failure, and hypoalbuminemia.[5] There are only few rare causes of exudative bilateral effusion like, malignant neoplasm, pulmonary embolism, and rheumatoid arthritis.[5]

A malignant pleural effusion is diagnosed when exfoliated malignant cells are found in pleural fluid or when malignant cells are seen in pleural tissue obtained by percutaneous pleural biopsy, thoracoscopy, thoracotomy, or at autopsy.[6] Establishing the diagnosis of a malignant pleural effusions from lung cancer signals incurability, and a malignant effusion from a non-lung primary is a manifestation of far-advanced disease and is associated with limited survival.[7] Our patient presented with bilateral pleural and pericardial effusion with thyroid being primary.

Carcinoma of any organ can metastasize to the pleura. However, carcinoma of the lung is the most common malignancy to invade the pleura and produce malignant and paramalignant effusion.[8] Others are breast, ovary and stomach, and lymphomas. Carcinomas of thyroid rarely metastasize to pleura.[9]

Anaplastic thyroid cancers are undifferentiated tumors of the thyroid follicular epithelium.[1] Unlike differentiated thyroid carcinomas like follicular and papillary carcinoma, anaplastic carcinomas carry grave prognosis with median survival of 6 months.[2]

The primary symptom of anaplastic cancer is a rapidly enlarging neck mass, occurring in about 85% of patients.[10] The enlarging thyroid tumor may cause neck pain and tenderness,

and compression (or invasion) of the upper aerodigestive tract, resulting in dyspnea (about 35% of patients), dysphagia (30%), hoarseness (25%), and cough (sometimes hemoptysis, 25%).[10] In our case, thyroid swelling was not the presenting feature, which was detected only on examination.

In anaplastic carcinoma, regional or distant spread is present at the time of initial diagnosis in 90% of cases. Commonest sites of distant metastases are lung, bone, brain, skin, liver, kidneys, and adrenal.[3] The lungs are the most common site of distant metastases[3] followed by the intrathoracic and neck lymph nodes.[4] These metastases are usually intrapulmonary mass lesions, but pleural involvement can occur.[11] In our case, the metastases from primary occurred on bilateral pleura but spared the lungs.

Diagnosis of anaplastic cancer is usually established by cytologic examination of cells obtained by FNAC or tissue obtained by large needle or surgical biopsy.[12] On cytopathology, morphologic patterns of anaplastic thyroid cancer include spindle cell, pleomorphic giant cell, and/or squamoid.[12] There is typically extensive necrosis. Unlike differentiated thyroid cancer, anaplastic thyroid cancer cells are much less likely to stain positive for thyroid transcription factor-1 (TTF1) or PAX-8 and do not stain positive for thyroglobulin in the anaplastic component of the tumor.[12] In the present case also, thyroglobulin was not raised.

All anaplastic cancers are considered stage IV cancers. Intrathyroidal anaplastic cancers are designated IVA (T4a); whereas, anaplastic cancers with gross extrathyroidal extension are IVB (T4b) and with distant metastases IVC.[13]

For patients who present with locally advanced inoperable disease who desire active therapy (rather than palliative care) like our case, combined radiotherapy and chemotherapy for local control of disease is suggested. Surgical resection for residual tumor could be considered if the disease is responsive.[11] Patient was given chemotherapy and radiation.

CONCLUSION

Malignant metastatic pleural effusion with pericardial effusion from anaplastic thyroid cancer is very rare. Nevertheless, the possibility of malignant metastatic pleural effusion with pericardial effusion from anaplastic thyroid cancer deserves consideration in the differential diagnosis of an exudative bilateral effusion. This case also highlights that a detailed general physical examination in any case is of paramount importance.

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