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THYMIC METASTASES FROM LUNG ADENOCARCINOMA FOUND INCIDENTALLY DURING CORONARY ARTERY BYPASS GRAFT SURGERY: A RARE CASE

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Introduction

The name of the thymus gland is derived from the Greek word θυμός (*thumos*), which means "soul", and for centuries it was believed that the soul was localized in this part of the body. Thymus gland is located in the midline and generally lies in the anterior superior mediastinum. The thymus is the primary lymphoid organ for T lymphocyte development and maturation that mediates immune defense against foreign antigens, immune tolerance to self-antigens, and immune surveillance on tumor cells. Lung cancer is the leading cause of cancer-related death with smoking remains the predominant risk factor for lung cancer. Lung cancers are categorized as small cell carcinoma or non–small cell carcinoma [e.g., adenocarcinoma, squamous cell carcinoma, large cell carcinoma]. We report a rare case of metastatic lung adenocarcinoma to thymus which incidentally found during coronary artery bypass graft surgery for severe three vessel disease.

Case Report

A 74 years old gentlemen, ex-smoker with underlying hypertension, hyperlipidaemia and benign prostatic hyperplasia, presented initially for non-ST-elevation myocardial infarction and completed treatment. Further workup was done, coronary angiogram revealed 3 vessel disease (RCA : Proximal CTO , LAD: Ostium 90% calcified, Proximal – mid 95% calcified, distal diffuse disease and LCX: Ostium 90%). Patient was then optimized peri operatively and scheduled for elective coronary artery bypass graft surgery. Intra-operatively there were incidental finding of three thymus mass (two at left lobe and one at right lobe) . The thymic tumour was excised and sent for histopathological examination (HPE). In regards to the coronary artery bypass graft surgery, 4 grafts was done and it was uneventful. Post-operatively patient was nursed in Cardiac Intensive Care Unit (CICU) and he was extubated 24 hours later with non-invasive ventilatory support. He stayed on initially at CICU for 10 days duration, and oxygen support was slowly weaned but unable to completely off. Three days later patient desaturated and requiring re-intubation and was transferred back to CICU for close monitoring. He then developed lung infection. He had total of 3 re - intubation post-surgery for impending respiratory collapse. During the treatment period , the HPE result of right and left lobe thymus gland reported as metastatic adenocarcinoma, likely primary from the lung. A contrast-enhanced computed tomography of thorax, abdomen and pelvis done, reported as heterogenous enhancing mass at the posterior and lateral segment of right lower lobe measuring 5.9 x 7.0 x 7.9 cm (AP x W X CC) with mediastinal nodes suggestive of metastasis (Figure 1 and 2).

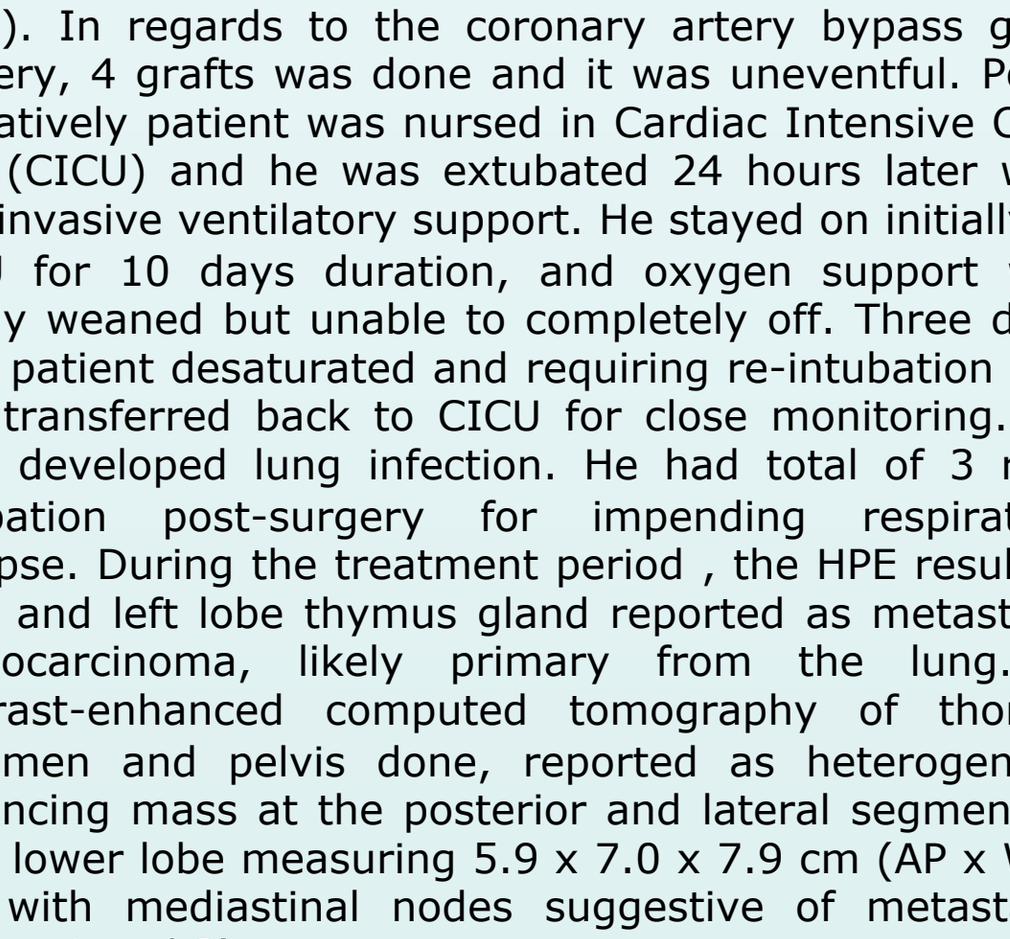

FIGURE 1

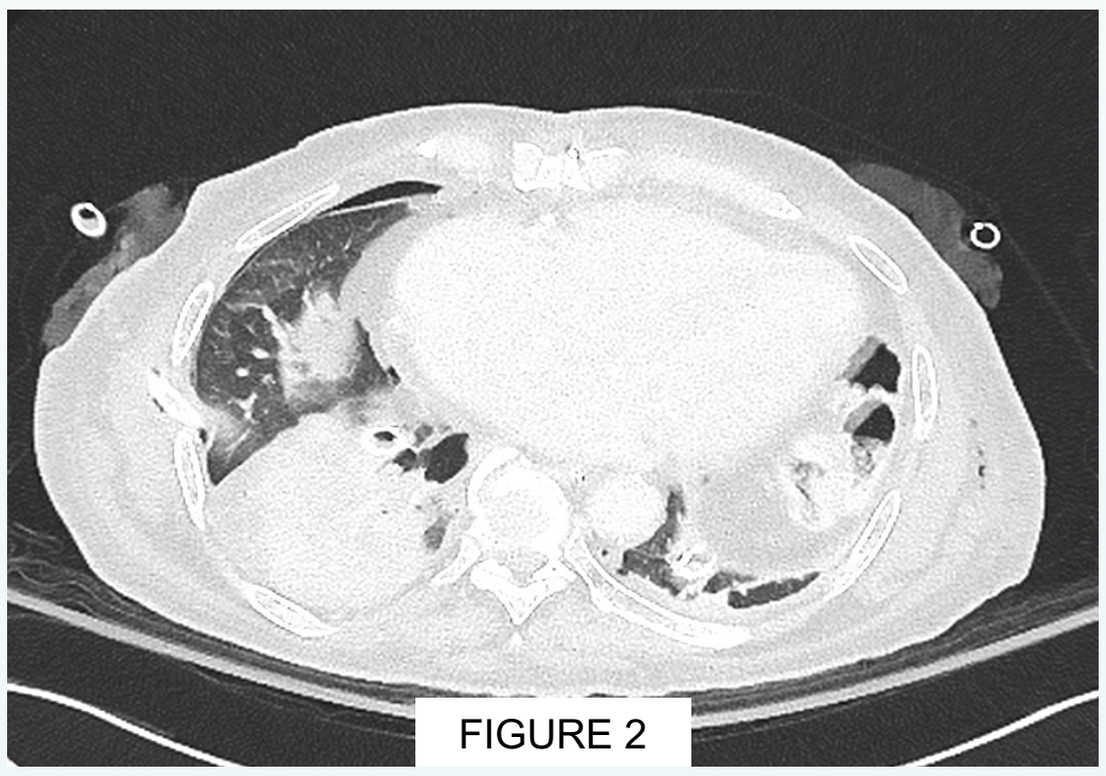

FIGURE 2

Discussion

The most common cause of cancer death in worldwide is lung cancer despite continued advances in lung cancer screening as well as surgical, medical, and radiation oncological treatments. Reported average five-year survival rate for lung cancer is only 15 percent. In the 20th century, squamous cell carcinoma (SCC) was the most common histological subtype of primary lung cancer in men accounting for nearly half of all cases in the 1970's. Since the 1980's, the relative frequency of SCC has declined with adenocarcinoma becoming the most common subtype by 1998-2002. Adenocarcinomas are histologically heterogeneous peripheral masses that metastasize early, and often occur in patients with underlying lung disease. Approximately 10 percent of lung cancers patient are asymptomatic and usually detected on chest radiographs, most patients are symptomatic when diagnosed. Forty percent of patients diagnosed with lung cancer initially present with signs and symptoms of intrathoracic spread. Intrathoracic spread is caused by direct extension of the tumor or lymphangitic spread. Till date, only one case has been reported on thymic metastasis from lung carcinoma. In 2011, Demondion et al published a case of thymic metastases from lung adenocarcinoma in asymptomatic 64 year old female who had previous history of lung adenocarcinoma for which she had undergone a right lower lobectomy five years previously. It was incidentally found during a surveillance chest computed tomography at three years after surgery. Although thymic metastases are extremely rare, they however do exist. Thymic metastases is rare as the parenchyma of the thymus has a blood thymus barrier, which prevents the thymus from making direct contact with antigens or cancerous cells, thereby seemingly excluding the occurrence of cancer metastasis. Very few cases of thymic metastasis has been reported and metastasis from lung, breast, stomach, and larynx carcinoma to the thymus have been discovered during autopsy. The incidence of thymic metastasis in 102 cases of carcinoma was 7% based on autopsy series by Middleton. In regards to lung adenocarcinoma is concerned, no data are available on metastases to thymus.

Conclusion

Thymic tumors generally are thymomas and thymic carcinomas. A malignant thymic tumor is generally not metastatic in origin. In our case, it was an incidental finding of thymic mass during coronary artery bypass grafting surgery which later reported as metastatic lung adenocarcinoma and is the second case reported till date. Due to its rarity, possibility of metastases in cases of thymic mass must also be considered as it changes the approach of patient management.