Case Report

Synchronous Primary Lung Cancer — Adenocarcinoma and Oncocytoma: The Rarest of Rare Duet

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Abstract

Multiple primary lung cancers are uncommon. These are divided as synchronous and metachronous. Synchronous primary lung cancers (SPLCs) are usually described on autopsy. The availability of rapid onsite evaluation (ROSE) in our case helped us reach early diagnosis. We present a rare case of SPLC having the combination of adenocarcinoma and oncocytoma. *To the best of our knowledge,* this rare duet has never been previously described in literature. **[Indian J Chest Dis Allied Sci 2019;61:203-205]**

Key words: SPLC, EBUS ROSE, Cytology.

Introduction

Multiple lung cancers have been described over the last Century. Synchronous primary lung cancers (SPLCs) account for 1% to 16% of the lung cancers.[1] We describe a rare case of synchronous adenocarcinoma with oncocytoma of the lung. Most SPLCs have been associated with squamous cell carcinoma.[2] *To the best of our knowledge,* this combination has a correlation and has not been previously reported.

Case Report

A 90-year-old lady with 35 pack years of significant smoking was apparently alright three months ago when she reported pain in the left shoulder and weight loss of 10kg. She was hospitalised for further work-up. She was on metoprolol medications for her hypertension. There was history of undergoing hallux right toe surgery nine years ago. Chest radiograph was suggestive of left hilar lesion with left pleural thickening (Figure 1). The contrast enhanced computed tomography (CECT) of thorax revealed a solid, irregular, inhomogeneous necrotic left upper lobe mass lesion of size 30x25x40 mm. Ipsilateral diffuse, inhomogeneous and irregular pleural thickening was seen involving both the mediastinal pleura and the margino-costal pleura with fissural extension. There was generalised mediastinal lymphadenopathy involving most stations, largest of 1.8cm size at the station 4L and right upper lobe nodules with pleural thickening. The lesion was suspected to be a primary lung malignancy *versus* mesothelioma. (Figure 2). A CECT abdomen revealed hepatic metastasis. Bronchoscopy revealed small multiple nodular lesions in the trachea from which biopsy was performed (Figure 3). The endotracheal biopsy on histopathology proved it

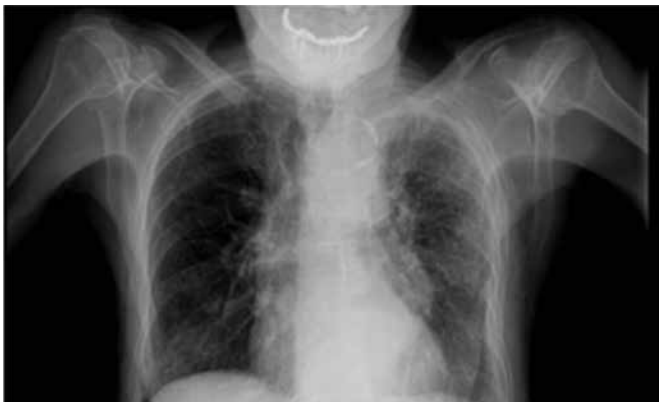

Figure 1. Chest radiograph (postero-anterior view) showing a suspicious left hilar lesion with left pleural thickening.

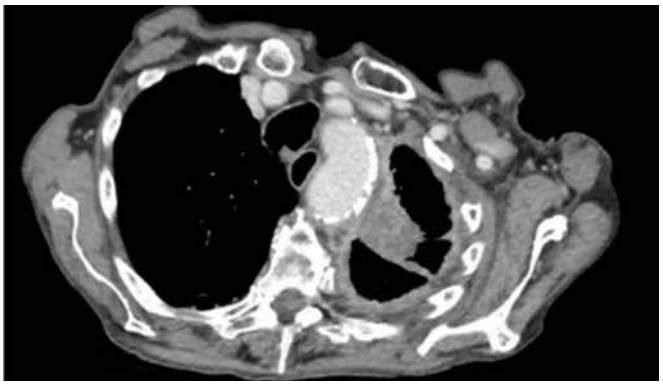

Figure 2. Contrast enhanced computed tomography of thorax showing a solid, irregular, inhomogeneous necrotic left upper lobe mass lesion of size (30mmx25mmx40mm) with ipsilateral diffuse, inhomogeneous and irregular pleural thickening, involving both the mediastinal pleura and the margino-costal pleura with fissural extension, mediastinal lymphadenopathy and right lung nodular lesions.

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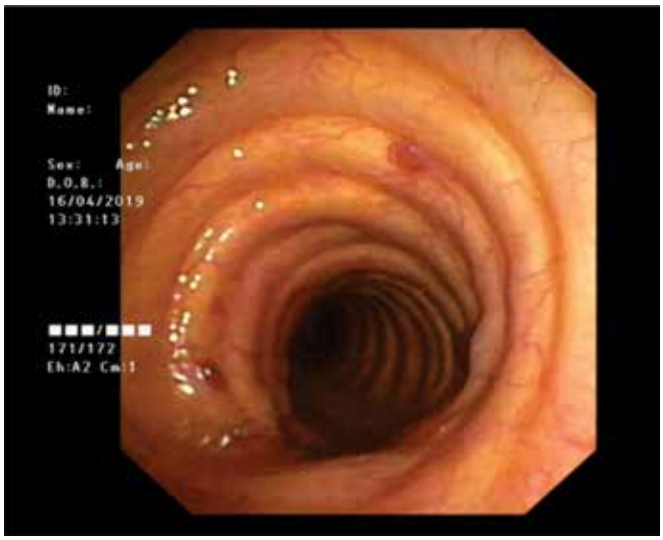

Figure 3. Bronchoscopy image showing the tracheal nodules.

to be oncocytoma. The immunohistochemistry showed monoclonal carcinoembriyonic antigen (mCEA) positive and thyroid transcription factor 1 (*TTF1),* glial fibrillary acid protein *(GFAP),* S100 negative (Figure 4). The case was discussed in a multidisciplinary meeting of the pulmonologist, radiologist, pathologist, oncologist and it was decided to pursue endobronchial ultrasound (EBUS)-guided fine needle aspiration cytology/biopsy in view of the discordant histopathology of the oncocytoma given the clinico-radiological suspicion of primary lung/pleural malignancy. The EBUS-guided fine needle aspiration of the

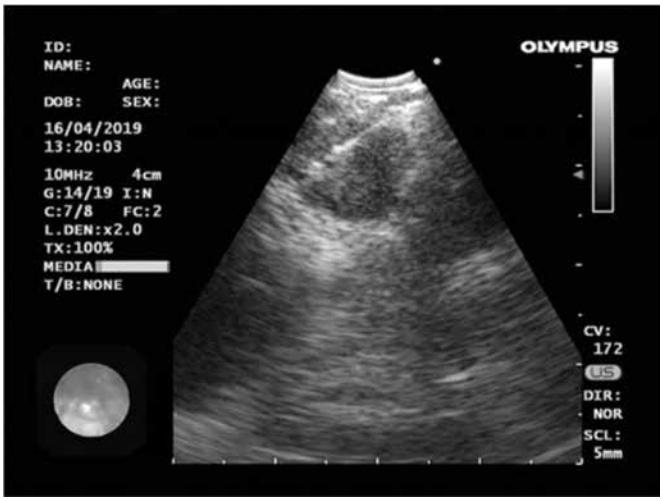

Figure 4. Endobronchial ultrasound-fine needle aspiration (EBUS-FNA) image showing EBUS needle in the 4L station lymph node.

4L station mediastinal lymph node was done with rapid on-site evaluation (ROSE). The cyto-histopathological correlation showed metastatic adenocarcinoma (Figure 5). Thus, a final diagnosis of synchronous primary lung carcinoma — adenocarcinoma and oncocytoma was made, wherein the left upper lobe mass with mediastinal lymphadenopathy and hepatic metastasis with pleural thickening were due to adenocarcinoma with metastasis and the tracheal nodules were due to oncocytoma.

Discussion

Two or more cancers occurring in the same patient concurrently or spaced in time has been reported in the literature since the 1920s. These cancers are further classified as synchronous and metachronous cancers. Synchronous primary lung cancer (SPLC) is defined as the occurrence of two or more primary lung carcinomas within different portions of the lung in the same time period. These need to be differentiated from primary lung cancer with parenchymal metastasis. Generally accepted diagnostic criteria include the demonstration of synchronous masses with different histology and the proof that tumours arise from separate and distinct endobronchial foci, if histologically similar. Metachronous primary lung cancer is defined as two or more primary lung cancers occurring in different portions of the lung spaced in time. Multiple primary lung cancer is often used as a common terminology for both.[1]

The pathophysiology of multiple lung cancers has been explained by the concept of "field cancerisation" wherein smoke related carcinogenic insult affects different cell types in the lung and give rise to cancers which can occur simultaneously or sequentially. However various postulates are debated on with the advent of newer technology of molecular diagnosis and genetic mutation analysis.[2] SPLC have been reported as combination of malignant tumours of the lung, most common being squamous cell carcinoma with small cell carcinoma and in early stage disease.[1,2] Adenocarcinoma have been described with small cell lung cancers very rarely in minuscule cases.[3] Adenocarcinoma has also been reported with lymphomas of lung and pleura rarely.[4,5] Yoon *et al*[6] described a novel case of synchronous triple lung cancer—squamous cell carcinoma, invasive mucinous adenocarcinoma and invasive non-mucinous adenocarcinoma.

Benign lung tumours are classified pathologically, as per the location (*i.e.,* endobronchial or parenchymal) and as single or multiple. Benign lung tumours can also be classified by their cell of origin. Adenomas and hamartomas constitute the largest group of benign lung tumours.[7] Oncocytoma is an uncommon benign tumour mostly found in the salivary glands, thyroid, kidney, and involvement of the lung has been observed in one case over a decade. It involves the trachea and bronchi as nodular lesions and can present as a solitary pulmonary nodule.[8] Synchronous benign and malignant tumours of the lung have been occasionally reported with hamartomas, leiomyomas and adenocarcinomas.[1,7] Synchronous colonic adenocarcinoma has been reported with renal oncocytoma.[9] We describe our case which had concurrent diagnosis of synchronous primary lung cancer of two different cell types of adenocarcinoma and oncocytoma. The left upper lobe mass with mediastinal lymphadenopathy and hepatic metastasis with pleural thickening were due to adenocarcinoma of

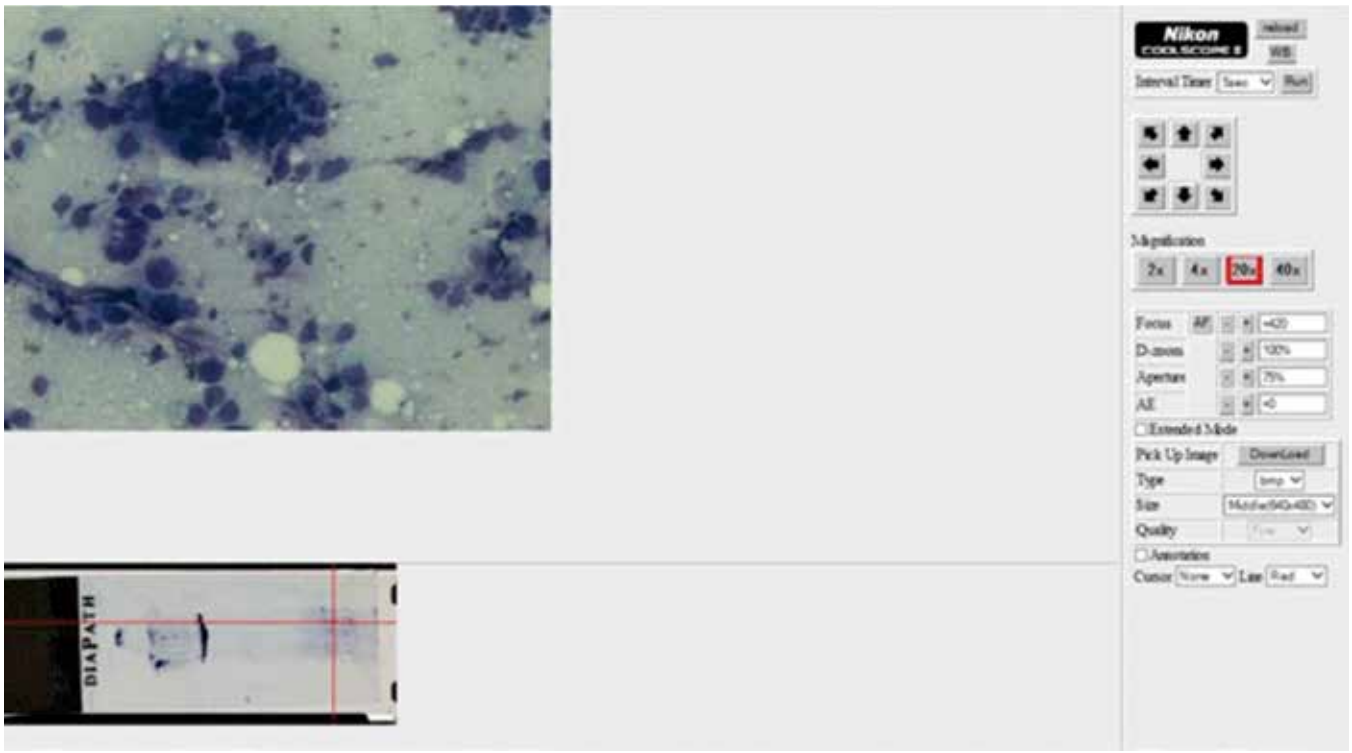

Figure 5. Rapid onsite evaluation (ROSE) photomicrograph showing the malignant cells.

lung with metastasis and the tracheal nodules were due to oncocytoma. *To the best of our knowledge,* this rare duet has never been described before.

The diagnosis in our case was possible with the availability of on-site ROSE. ROSE is a simple, cost-effective technique helpful in reducing the sampling error, and thus, increasing the accuracy of cytology in the diagnosis of lung lesions.[10] A multi-disciplinary approach involving pulmonologist, radiologist, oncologist and pathologist with ROSE followed by morphological examination was of immense utility for reaching the diagnosis and clarifying the confusion in our case.

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