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Case Report Open Access

Metastatic Adenocarcinoma in the Young Adult

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Abstract

We report a case of metastatic adenocarcinoma pleura in a non-smoking 29-year-old man. X-ray Chest revealed Left sided repeated pleural effusion despite repeated tapping. CT revealed a moderate Left sided pleural effusion. A VATS biopsy of the Left Pleural Nodules and Left lung nodules revealed a metastatic adenocarcinoma. He was a non-smoker and molecular markers revealed an EGFR Mutation and were started on oral TKI. He had near complete resolution after 6 months except for mild thickening of the pleura at the base.

Keywords: Lung cancer; Adenocarcinoma; Pleural nodules; Pleural effusion; Thoracoscopic surgery

Introduction

The incidence of lung cancer among young adults has been found to be around 1.2% to 6.2% (under 40 years), 5.3% (under than 45 years) [1-4], and 13.4% (under 50 years) [5]. However, previous reports have shown trends of increasing incidence rates of lung cancer among young patients [6,7].

Case Presentation

29 year old non-smoker had h/o dry cough and chest pain for 15 days.

He subsequently developed shortness of breath for 5 days. Being a Para medic, he got himself an x-ray Chest PA view which showed moderate pleural effusion on the left side. A CT scan of the thorax and PET CT was suggestive of Nodal mass in the Left aortic pulmonary window as well as moderate left sided pleural effusion. The pleura were marginally thickened with suspicion of few nodules over the fissure.

He had h/o Tobacco chewing in small amounts for approximately 3 years but no history of tobacco smoking. No significant familial history of cancer. He was averagely built and did not have any significant Lymphadenopathy. On percussion there was a dull note in the left lower zone as well as diminished breath sounds in the left lower chest.

He was planned for a tapping of the pleural fluid and pleural biopsy via a Thoracoscopic approach (VATS-Video assisted Thoracoscopic Surgery).

The procedure was performed under General Anaesthesia with a paravertebral block [2]. Ports placed 10 mm and 5 mm. A 30° Telescope was used. The entire pleural cavity was visualized, which revealed, Multiple Nodules studded over lung. Parietal and visceral pleura too showed scattered nodules as well as there was extensive nodularity over the diaphragm.

Approximately 500 ml of haemorrhagic pleural fluid drained and sent for cytology. Multiple pleural biopsies taken and sent for Frozen Section: suggestive of Adenocarcinoma. The lung expansion after the fluid drainage was adequate and hence VATS Pleurodesis done with 3 g of Talc. His intra operative blood loss was minimal. Chest drain was removed on 2nd Postoperative day after confirming full lung expansion on the x-ray chest and was discharged on third postoperative day (Figure 1).

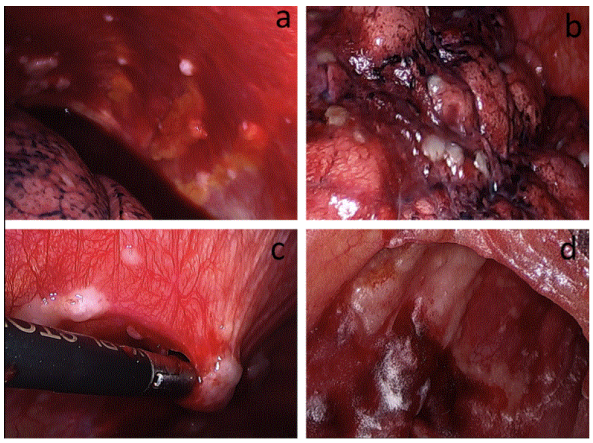

Figure 1: VATS pleural biopsy and talc pleurodesis. a) Pleural deposits with haemorrhagic effusion; b) Lung nodules; c) Pleural nodules (VATS Biopsy); and d) Talc pleurodesis.

The final histopathology on left pleural biopsy was metastatic adenocarcinoma of pulmonary origin.

Immunohistochemistry staining shows the tumour cells strongly positive for CK-7, TTF-1 (Thyroid Transcription factor-1) and Napsin A and negative for CK-20, Calretinin, and ALK-1 (Figure 2).

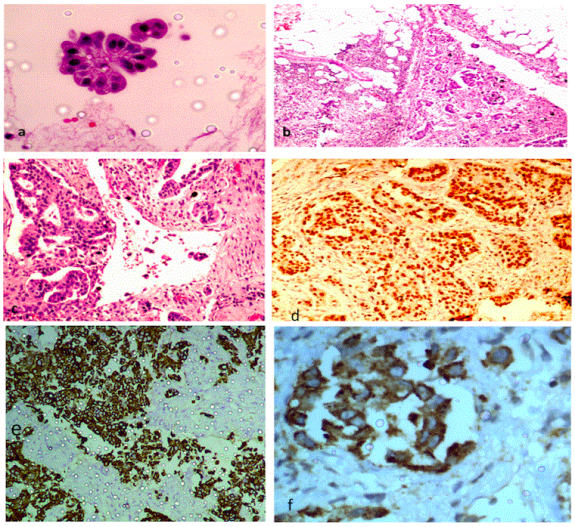

Figure 2: Final micro pictures. a) Cluster of adenocarcinoma cells in pleural fluid cell block (H and E, X100); b) Pleural biopsy with diffusely invasive malignant glands (H and E, X100); c) Pleural biopsy with fragments of acinar malignant glands (H and E, X100); d) Malignant glands with (Thyroid Transcription factor-1) immunoreactivity (TTF-1, X100); e) CK-7 positivity in tumor cells (X100); f) Napsin A positivity in tumor cells seen as brown granularity in the cytoplasm (X400).

His molecular testing revealed EGFR mutation positive on Exon 19 and was subsequently started on oral TKI. He had a good response within 6 months of initiating the treatment and is disease free till date.

Discussion

Lung cancer in young adults has several unique characteristics: a high percentage of patients are female, more adenocarcinoma, and more advanced stage at the time of diagnosis, and more patients receiving aggressive treatment [8-11]. Previous studies have shown that young patients had a similar survival as older patients [12]. In contrast, some studies have reported that younger patients have better outcomes [13,14]. These inconsistent findings could be related to different treatment modalities and ethnicities of patients.

Although it is easy to assume that the recurrent pleural effusion in the elderly smoker could be malignant, it is extremely difficult to assume the same in the young adults. It is important to note that, even in young adults, if there is recurrent pleural effusion and a cause is not determined, it would be worthwhile considering a Video Assisted Thoracoscopic procedure (VATS) for these individuals.

Thoracoscopy (under sedation or general anaesthesia) has grown in popularity as a diagnostic and therapeutic tool for malignant effusions. Under sedation, it is now widely used by respiratory physicians in the diagnosis and management of pleural effusions in patients with good performance status. Patient selection for thoracoscopy and talc poudrage is important in view of the invasive nature of the procedure and cost. A significant benefit of thoracoscopy is the ability to obtain a diagnosis, drain the effusion and perform a pleurodesis during the same procedure. The diagnostic yield and accuracy of thoracoscopy for malignant effusions is >90% [15]. Talc poudrage performed during thoracoscopy is an effective method for controlling malignant effusions with a pleurodesis success rate of 77-100%. Randomised studies have established the superiority of talc poudrage over both bleomycin and tetracyclines.

Thoracoscopy has less to offer in patients with a known malignant pleural effusion and a clearly trapped lung on the chest x-ray. However, under general anaesthesia, reinflation of the lung under thoracoscopic vision will inform whether the lung is indeed trapped and therefore guide the decision to perform talc poudrage or insert a pleural catheter. The procedure can facilitate breaking up of loculations or blood clot in haemorrhagic malignant pleural effusion and can allow the release of adhesions and thereby aid lung re-expansion and apposition of the pleura for talc poudrage.

Thoracoscopy is a safe and well-tolerated procedure with a low perioperative mortality rate (<0.5%). The most common major complications are empyema and acute respiratory failure secondary to infection or re-expansion pulmonary oedema; although the latter may be avoided by staged evacuation of pleural fluid and allowing air to replace the fluid.

The frequency of EGFR mutation in adenocarcinoma showed wide variation among different reports (3-59.7%); this was related to ethnicity, gender, and smoking status [16-20]. Several studies, in which East Asia was the focus, have shown that the EGFR mutation rate in NSCLC was about 26-38.6%, and the mutation rate increased 32-55% in adenocarcinoma [16-18]. However, there is a paucity of data regarding the EGFR mutation status in young patients (Figure 3).

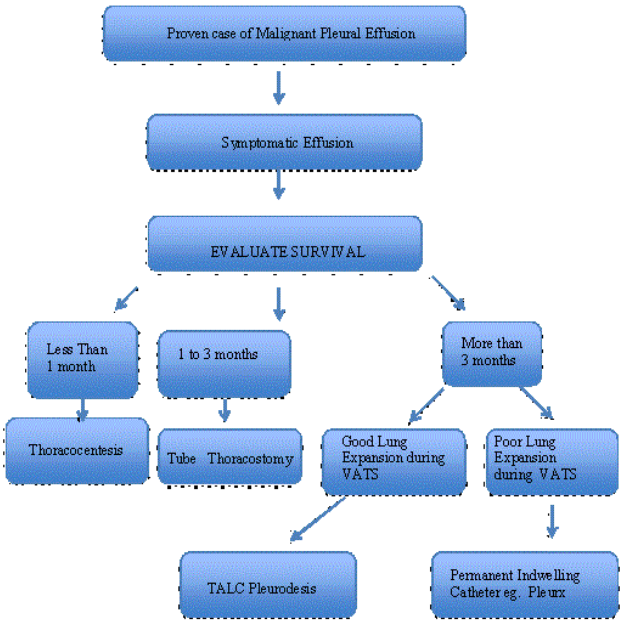

Figure 3: Management of malignant pleural effusion.

Conclusion

Metastatic Adenocarcinoma of the Lung with involvement of the pleura along with repeated pleural effusion is commonly encountered in the elderly with history of smoking. This case report however highlights the importance of having a high index of suspicion, which enabled us to pick up the correct pathology and treat accordingly.

Recurrent pleural effusion for which a cause cannot be ascertained should be followed up with imaging and VATS pleural biopsy should be a part of the algorithm.

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