

## Recurrent Malignant Pleural Effusion in Lung Cancer Adenocarcinoma patient.

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### ABSTRACT

**Background:** Pleural effusion is associated with diseases including malignancies, infections, autoimmune diseases and trauma. Carcinomas of the lung, breast and lymphomas frequently cause malignant pleural effusions. Lung adenocarcinoma is especially associated with malignant pleural effusion, indicating advanced stage disease or disease progression. This case reporting 61 years old, Malay lady was experienced symptoms of worsening shortness of breath, frequently coughing with whitish sputum and also complained unable to ambulate for long distance and inability to lie flat. On 22/10/2019, patient came to Lung Cancer Clinic as follow up. On examination noted that patient feeling of chest tightness and chest X-ray found evidence of recurrent pleural effusion. Ultrasound Guided thorax done with chest tube insertion done on 24/10/2019. Pleurodesis was done to prevent recurrent pleural effusion.

**Keywords:** malignant pleural effusion, lung cancer, ECOG

#### Introduction

Malignant pleural effusion is defined as the accumulation of a significant amount of exudate or extra fluid in the space between the lungs and the chest wall, accompanied by the presence of malignant cells or tumor tissue. The space between the lungs and the chest wall is called pleural space. This condition is a sign that the cancer has spread, or metastasized, to other areas of the body. According to American Society of Clinical Oncology (2017), about half of people with cancer develop a pleural effusion. Malignant pleural effusion is a common clinical problem that results in disabling breathlessness for patients with malignancy.

Patients often require multiple invasive procedures in order to gain a diagnosis and manage their symptomatic pleural effusions, which impacts their quality of life. A malignant pleural effusion is treatable. But it can be a serious and potentially life-threatening condition. In one postmortem series, malignant effusions were found in 15% of patients who died with malignancies. Although there have been no

epidemiologic studies, the annual incidence of malignant pleural effusions in the United States is estimated to be greater than 150,000 cases ("Management of Malignant Pleural Effusions", 2000). Malignant pleural effusions (MPEs) are the second leading cause of exudative pleural effusions after parapneumonic effusions. In the vast majority of cases, a MPE signifies incurable disease associated with high morbidity and mortality (Nam, 2014). Almost any type of cancer can cause a pleural effusion if it is present in or spreads (metastasizes) to the chest area.

#### Case report

A 61-year-old Malay lady, newly diagnosed as lung adenocarcinoma stage IVA presented with recurrent right pleural effusion. She was having symptoms of persistent cough with whitish sputum and worsening shortness of breathes since last past 2 weeks. She unable to ambulates for long distance and need walking stick in ambulatory. Patient also claims she needs to use 3 pillows to sleep at night. On

examination noted that patient looks tachypnea and general assessment was performed by using ECOG shows that patient at scale of 3. No unknown history of transudative effusion. Chest X-ray shows the evidence of right pleural effusion and collapse of right lung (figure 1). Doctor was planned Ultrasound guided thorax with chest tube insertion to treat the symptoms of shortness of breath and KIV pleurodesis as prevent recurrent pleural effusion. Currently patient reducing shortness of breath after chest tube insertion and able to ambulate for long distance and speaks in full sentence.

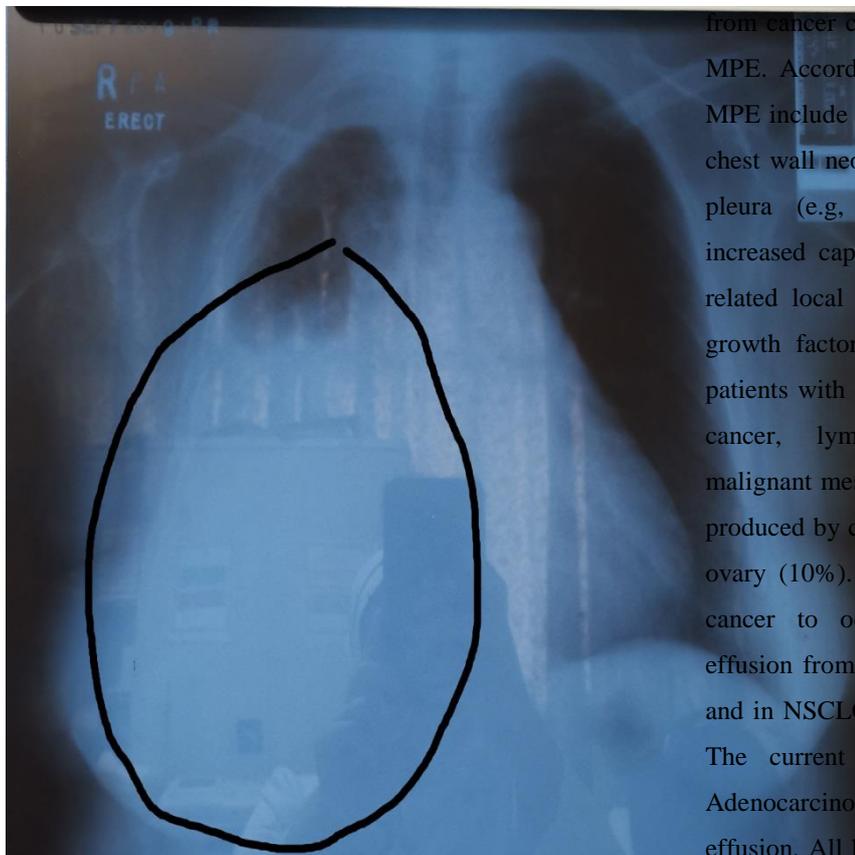


Figure 1. Chest X ray shows right pleural effusion in circle line.

### Discussion

Malignant pleural effusion (MPE) is defined as the presence of neoplastic cells in the pleural fluid. In the setting of a known malignancy but in the absence of cytological evidence of tumour cells, a pleural effusion is termed a premalignant effusion. A malignant pleural effusion is the buildup of fluid

and cancer cells that collects between the chest wall and the lung. This can cause patient to have chest discomfort as well as feel short of breath. According to Egan et al., (2014), the precise physiology of this process remains unclear, it is generally accepted that it occurs in a stepwise manner including the loss of adhesion and dislodgement of neoplastic cells from the primary tumour site; adherence and penetration of the blood vessel wall; migration through the pleura; production of autocrine growth factors and angiogenesis induction. The most common etiologies for MPE are almost from cancer cell. These malignancies account for 80% of all MPE. According to Esmé & Calik (2013), other causes of MPE include direct invasion (e.g. lung cancer, breast cancer, chest wall neoplasms), hematogenous spread of tumor to the pleura (e.g. metastasis, non-Hodgkin's lymphoma), or increased capillary permeability caused by tumor invasion-related local inflammatory changes or vascular endothelial growth factor production. MPE affects up to 15% of all patients with cancer and is the most common in lung, breast cancer, lymphoma, gynecological malignancies and malignant mesothelioma. However, MPE are most frequently produced by carcinomas of the lung (37%), breast (25%) and ovary (10%). It shows the highly risk more focus to lung cancer to occur the pleural effusion. Malignant pleural effusion from lung cancer has a particularly poor prognosis, and in NSCLC it is actually reclassified as stage IV disease. The current review aims to summarize Lung Cancer Adenocarcinoma can cause recurrent malignant pleural effusion. All histological types of lung carcinomas are likely to cause pleural effusion. The most frequent histological type seems to be adenocarcinoma (40% of the cases), with SCLC as secondly, in about 25% of the cases. Adenocarcinoma is actually the commonest histological type of NSCLC also, it is more likely to arise in the lung periphery invading the pleura and it's usually associated with MPEs, indicating advanced stage disease or disease progression. There are studies were investigated that epidermal growth factor receptor (EGFR)

gene mutation status of lung adenocarcinoma patients with MPE. The studies done by Wu et al., (2012), reported that patients in stage IV lung adenocarcinoma with MPEs at initial diagnosis have shorter overall survival and higher EGFR mutation rate, especially for L858R, than patients who develop MPEs following disease progression. Determining the diagnosis of pleural effusion is important in planning the appropriate management and in the prognostication of the malignant disease. Thoracentesis are generally considered as the first step for diagnosis of pleural effusion. By performing the Thoracentesis, the doctors can draw out cytology fluid from pleural space and this procedure also consider as therapeutic. According to Yu, (2011), Thoracentesis is a basic and valuable procedure not only to obtain a fluid sample for differentiating transudate from exudate, but to remove the fluid in a patient with a large volume of effusion for symptomatic relief. For recurrent pleural effusion patient, doctor will suggest to do Pleurodesis as it's considered the best palliative therapy for the treatment of recurrent malignant pleural effusions. As stated by Santos et al.,(2017), Slurry talc pleurodesis remains one of the most common and effective therapeutic options. For this case, Thoracentesis is treated for therapeutic for recurrent pleural effusion. Patient was reduced shortness of breath after pleural effusion was drained out. Patient was able to ambulate without walking stick and able to walking for long distance. As a conclusion the Thoracentesis will be beneficial to palliate the MPE and the pleurodesis still lead the management of it for malignant pleural effusion cases in Lung Cancer.

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