Lung Adenocarcinoma Metastases to Mediastinal with Malignant Pericardial Effusion

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Abstract

Lung adenocarcinoma with malignant pericardial effusion and also metastases to mediastinum has great impact on morbidity and mortality of patient and it is rare case. Most adenocarcinoma in the mediastinum are metastases from the lung, gastrointestinal tract, pancreas, kidney or even the pituitary gland. Cardiac metastases in lung cancer may occur due to retrograde lymphatic spread or by hematogenous dissemination of tumour cells. Pericardium is frequently involved in direct cardiac invasion by adjacent lung cancer. Pericardial effusion, pericarditis, and tamponade are common and life threatening presentation in such cases. A 42-years-old male with superior mediastinal mass has malignant pericardial effusion, cytology shows adenocarcinoma. The patient undergo transthoracic fine needle aspiration biopsy. The result from biopsy is adenocarcinoma. This is a rare case, patient with primary lung adenocarcinoma and malignant pericardial effusion also metastases to mediastinum. To determine the diagnosis requires a comprehensive clinical evaluation and multidisciplinary approach.

Keywords: Mediastinal mass, adenocarcinoma, metastases, pericardial effusion.

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1. Introduction

Lung adenocarcinoma with malignant pericardial effusion and metastases to mediastinum is a rare malignancy. Malignant pericardial effusion which spread for mediastinal is very rare. We

present a patient with lung adenocarcinoma and malignant pericardial effusion. Coexistence of lung adenocarcinoma and malignant pericardial effusion with same result adenocarcinoma from pathology is extremely rare.

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2. Background

This is a rare case, patient with lung adenocarcinoma and malignant pericardial effusion. Coexistence of lung adenocarcinoma and malignant pericardial effusion with same result adenocarcinoma from pathology is extremely rare. To determine the diagnosis requires a comprehensive clinical evaluation and multidisciplinary approach.

3. Case Report

Mr. J, a 42-year-old male, Javanese, merchant, smokers. The patient was presented to tertiary hospital with shortness of breath, productive cough, chest pain, unexplained weight loss, and decrease of appetite since four months prior. Physical examination revealed a painless solid mass on the left side of the neck with diameter 2cm and dullness upon percussion on the upper third of the right side of the thorax. Other physical examination findings were unremarkable. Leukocytosis with neutrophilia, slight increase of liver enzymes (61 and 63 for SGOT and SGPT respectively), mild hyponatremia and compensated metabolic acidosis were found on initial laboratory work-up. Sinus tachycardia were found on electrocardiogram. Radiologic evaluation with Chest X-ray suggested pericardial effusion, left sided pleural effusion, opacity

on *hemithorax dextra* suggestive of mediastinal mass and atelectasis on superior lobes of the right lung (Figure 1). Further examination using ultrasonography (USG) suggested liver congestion and consolidation at the base of the left lung. To give a clearer image a Computed Tomography Scan (CT-scan) with contrast of the Thorax was conducted in which not only mass on superior mediastinum expanded to the bilateral colli region invading the superior vena cava with widening of the superficial veins of the chest wall along with pericardial effusion were observed, but also multiple right lung cavities with consolidated bilateral pulmonary nodules suspected of metastatic process (Figure 2).

Further more, in order to confirm pathohistological characteristic of the mass cytologic examination was conducted using several modalities. Cytologic examination of sputum showed no malignant cells, no epithelial cell with inflammatory changes. However, inflammatory cells, polymorphonuclear cells, monuclear cells and histiocytes were found on the background (Class II).

On the other hand cytologic examination of samples from pericardiocentesis showed adenocarcinoma cells (Figure 3). This result is in accordance

to Fine Needle Aspiration Biopsy (FNAB) that was performed on the *Supraclavicular Sinistra* lymphatic nodules, 1-2 cm in diameter, with solid consistency. It was found that on microscopic smears proliferative malignant epithelial cells that are oval in shape, moderate in pleomorphic, forming acini and glands. This result suggested a possibility of metastases of poorly differentiated adenocarcinoma at the left supraclavicular lymphatic nodules (Figure 4).

USG-guided transthoracic FNAB was conducted on multiple nodules at the left and anterior *Colii* region. Characteristic of the nodules were fixed, solid and springy, with undefined boundaries. Hypersellular smears consist of distribution and clusters of round nuclei, pleomorphic cells, rough

chromatin, bubbly cytoplasm were found (Figure 5A-B). The tissues samples underwent immunocytochemistry staining with TTF-1, thyroglobulin and CD 117 antibodies. The tissues were immunopositively stained for TTF-1 and negative for thyroglobulin and CD-117 (Figure 5C-D). Based on those findings, we can conclude that the tissues samples were adenocarcinoma metastases consistent with pulmonary immunophenotype.

Using Optic fiber bronchoscopy, an edematous stenting in the medial lobes of the right bronchus suggestive of a malignancy was observed (Figure 6). Additional examination of washing-Brushing cytology also revealed adenocarcinoma cells.

Figure. 1. A. AP Chest X-ray (May 12th 2017), Homogeneous opacity at the left base of the thorax suggestive of pleural effusion on the left lung, CTR 92% and bottleshaped cor suggestive of pericardial effusion, B. Lateral Dextra Chest X-Ray (May 12th, 2017) Homogeneous radiopaque in the upper field with a triangular shadow with peaking at the Hillus and high rise of right hemidiafragma. Conclusion: Suspected mediastinal mass or central pulmonary mass, and suspected atelectasis of the superior right lung.

Figure 2. Thorax CT Scan with contrast (June 21st 2017). There is a heterogeneous mass in the superior mediastinum to bilateral colii size $\pm 5.4 \times 6.8 \times 2.1$ cm, warm heterogeneous after contrast enhancement, impression of mass invasion to the superior vena cava, visible superficial vein dilation in the chest wall. Right lung: Multiple cavities in segments 1 and 3, nodular consolidation seen in segment 1 with a diameter of ± 1.6 cm warms after contrast enhancement (30-40HU $\rightarrow$ 80-90 HU). Vascular patterns shows filling defects in the apical segment. The right main bronchus appears to be open. Left lung: visible consolidation in segment 3, normal vascular pattern, main bronchi appears to open. Heart: Normal size, normal shape and position. A liquid density lesion is visible, some with septa in the pericardial cavity. Visualized liver: enlarged size of craniocaudal diameter ± 13.6 cm. Conclusion : superior mediastinal mass up to bilateral colii region and appears to invade superior vena cava with dilation of superficial veins to the chest wall, pericardial effusion, right pulmonary thrombus, multiple right lung cavities with bilateral pulmonary nodular consolidation with suspected metastatic process and pneumonia, and hepatomegaly.

Figure. 3. Pericardial effusion cytology (May 26th 2017) shows malignant cells of adenocarcinoma.

Figure. 4. Fine Needle Aspiration Biopsy (FNAB) of the left supraclavicular lymphatic nodules (May 22nd 2017) shows proliferative malignant epithelial cells that are oval in shape, moderate in pleomorphic, forming acini and glands. Conclusion : metastases of poorly differentiated adenocarcinoma.

Figure 5. USG-guided transthoracic FNAB on multiple nodules at the left and anterior Colli region (June 15th 2017). A-B. Tissue samples appear hypersellular consist of distribution and clusters of round nuclei, pleomorphic cells, rough chromatin, bubbly cytoplasm. C-D. Immunocytochemistry staining with TTF-1, thyroglobulin and CD 117 antibodies. The tissues were immunopositively stained for TTF-1 and negative for thyroglobulin and CD-117 Conclusion: adenocarcinoma metastases consistent with pulmonary immunophenotype.

Figure 6. Optic fiber bronchoscopy. Mucosa of the right main bronchus appears edematous. Lumen narrowed due to extralumen pressure. Washing-brushing was done at segment B4.

4. Discussions

Lung adenocarcinoma with malignant pericardial effusion and also metastases to mediastinum as a rare presentation of any malignancies. Primary lung cancer is the most common cause about one third of malignant pericardial effusions. It should be noted that malignant pericardial effusion is an indicator of poor prognosis; it can show some signs of impending cardiac

tamponade and is clinically characterized by a hemodynamic instability secondary to increased pressure due to pericardial fluid accumulation needs invasive procedure like pericardiosintesis. From several studies suggest that the approach to malignant pericardial effusion should be individualized based on the type of primary cancer and patient response to chemotherapy. In this case, pathology result

adenocarcinoma, from washing and brushing lung bronchoscopy, transthoracic fine needle aspiration biopsy of mediastinum and cytology from pericardial effusion. However, our patient's immunohistochemical studies were negative for Tg and Cd 117 and positive for TTF-1, shows suggestive metastases from lung. Chemotherapy agents in this case are carboplatin and paclitaxel, as first line chemotherapy for lung adenocarcinoma regarding the guideline.

5. Conclusion

A 42-year-old male with lung tumor with mediastinal metastases and malignant pericardial effusion, which undergo bronchoscopy, transthoracic fine needle aspiration biopsy and pericardiosintesis. The pathology result from all procedure are adenocarcinoma. The immunohistochemical result show negative for Tg and Cd 117 and positive for TTF-1, shows suggestive metastases from lung. Chemotherapy agents in this case are carboplatin and paclitaxel, as first line chemotherapy for lung adenocarcinoma regarding the guideline.

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