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Case Report

Total obstruction of small intestine due to metastatic lung adenocarcinoma

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ABSTRACT

Lung cancer with symptomatic small intestinal metastasis is a rare case but potentially fatal with poor diagnosis in most advanced stages. A-82 years old male patient with chronic cough, chest pain, progressive dyspnea abdominal pain, obstipation, and distended abdomen. Chest computed tomography (CT)-scan revealed right inferior pulmonary lobe of lung tumor. Abdominal X-ray and abdominal ultrasound showed ileus obstruction features. The patient underwent emergency laparotomy under the diagnosis of total ileus obstruction. Surgical resection of two masses in the small intestinal were performed with ileo-ileal anastomosis. Histomorphology of the surgical specimen revealed poorly differentiated adenocarcinoma involving the small intestine without precursor lesions that suggested a metastasis. The patient underwent thoracentesis and pleural fluid cytology that reported seeding of non-small cell lung cancer (NSCLC) tend to adenocarcinoma type. A diagnosis of lung adenocarcinoma with small intestinal metastasis was concluded based on correlation of these anatomopathological examination. Clinicians should consider possibility of lung cancer with small intestinal metastasis in patient with abdominal symptoms.

Keywords: Small intestine, Lung cancer, Adenocarcinoma, Metastasis

INTRODUCTION

Lung cancer is chronic disease with the highest mortality rate in worldwide, responsible for more than 19% of all the cancer-related death.[1,2] About 85% of lung cancers type are non-small cell lung cancer that include adenocarcinoma, squamous cell carcinoma and large cell carcinoma. Regardless of lung cancers type, half of lung cancers have distant metastases at the time of identification.[3,4] The liver, brain, bone, and adrenal glands are the most common area of lung cancer metastasis. Nevertheless, lung cancer with symptomatic small intestine is extremely rare.[5] Gastrointestinal metastases from lung cancer was reported in about 4,7%-14% of cases.[3,5,6] However only 0.2%-0.5% cases of lung cancer have symptomatic intestinal metastasis in advanced stage.[5,7,8] The initial diagnosis is still challenging due to the low incidence and nonspecific symptoms of small intestinal metastasis. When symptomatic small intestinal metastasis from primary lung tumor exists, the prognosis is poor with mean survival only 4-8 weeks.[7] We report unusual patient with clinical case of lung adenocarcinoma with concurrently detected small intestinal metastasis presenting as total intestinal obstruction.

CASE REPORT

A-82 years old man came to our emergency department with chronic cough, progressive dyspnea during the previous 24 hours and chest pain. The patient described chest pain located in the right side that migrated to the left chest and his back. He also had 5 days' duration of abdominal pain, obstipation and absence of flatus with nausea. There was no vomiting, melena, hemoptysis or

fever. Notably, the patient had past medical history of hypertension without other serious illnesses. He was an active smoker for the past 70 years. No one in his family had history of lung cancer. Initial examination showed slight hypoxia. Chest examination revealed decreased of breath sound on the right hemithorax with dullness on percussion. Abdominal examination found distended abdomen, increased tympanic sound on percussion and decreasing of bowel sound. Besides, enlargement of right supraclavicular lymph node was also found.

Initial laboratory data showed mild leukocytosis. Other laboratory tests were normal. Chest X-ray showed infiltrate and pleural effusion of the right lung (Figure 1). Chest CT-scan with contrast demonstrated lung mass measuring about 3.1×2.6 cm posteriorly within the right lower lobe of lung suggested malignancy (Figure 1). Abdominal X-ray showed coiled spring appearance and herring bone sign with minimal gas in the large bowel (Figure 2). The abdominal ultrasound also revealed dilatation of small intestine with hyperechoic spots of gas. These examination results were compatible with ileus obstruction. Then, the patient was admitted with a probable diagnosis of lung tumor and total ileus obstruction.

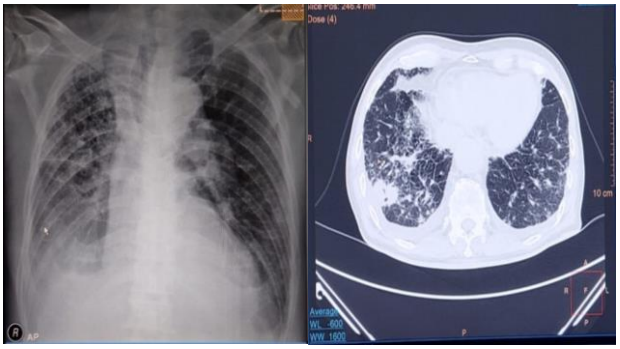

Figure 1: Chest X-ray reveal infiltrate and pleural effusion of the right lung. Chest CT-scan show lung tumor in the right inferior pulmonary lobe.

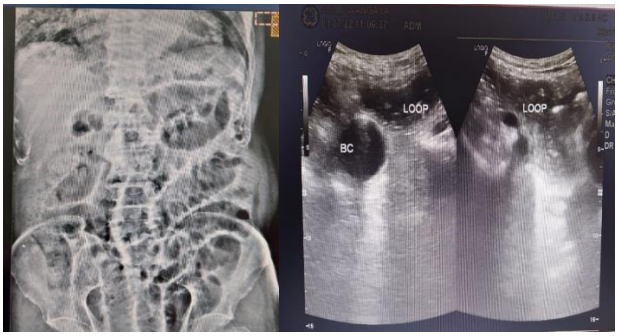

Figure 2: Abdominal X-ray and abdominal ultrasound showed feature of ileus obstruction.

A fine needle aspiration biopsy of the right supraclavicular lymph node was performed to identify suspected metastatic lesion. Then, cytomorphologic feature of that site showed metastatic carcinoma (Figure 3). The result raised the suspicion of lung as the primary carcinoma.

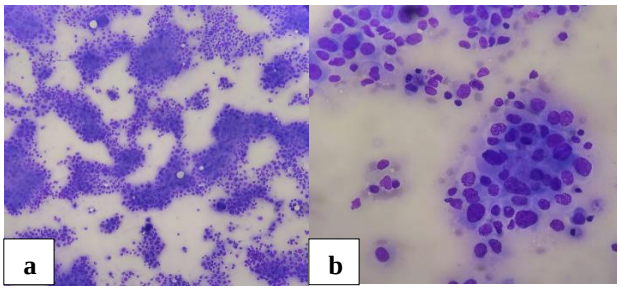

Figure 3: FNAB of the supraclavicular lymph node using Diff-Quick staining (a) crowded sheet of neoplastic cells, 100x magnification, and (b) mitotic figure was found, 400x magnification.

Emergency exploratory laparotomy was performed under the diagnosis of total ileus obstruction. At surgery, we found dilatation of proximal ileum, collapse of distal ileum and two intra-abdominal tumors located in the proximal ileum. Tumors discovered approximately 160 cm and 280 cm from the ligament of Treitz. The patient underwent segmental resection of the small intestine involving the abdominal masses. Ileo-ileal anastomosis was performed after the removal of two separate tumors in the small intestine (Figure 4). Then, the patient was transferred to intensive care unit for monitoring.

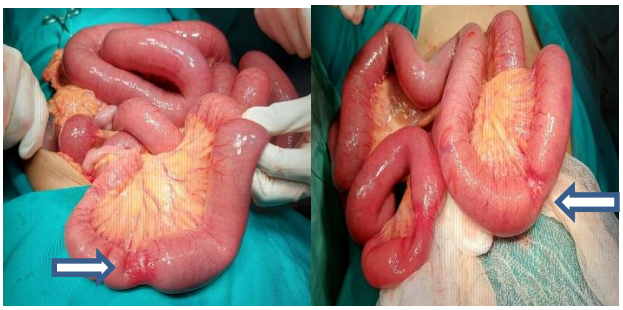

Figure 4: Perioperative photograph showed small intestinal tumors.

According to the chest CT scan before abdominal surgery that showed lung mass, we thought that the two parts of masses must be associated and further examination should be done. The histological examination obtained from the resected small intestinal indicated of poorly differentiated adenocarcinoma involving the small intestine without precursor lesions suggested a metastasis (Figure 5).

The patient underwent thoracentesis and pleural fluid cytology a few days after discharge from ICU. Cytomorphology evaluation of pleural fluid reported seeding of NSCLC tend to adenocarcinoma type (Figure 6). Histomorphology of small intestinal was similar with the features of adenocarcinoma. A diagnosis of lung adenocarcinoma with small intestinal metastasis was concluded based on correlation of these

anatomopathological examination. This patient was determined to stage IVB lung adenocarcinoma (T2aN3M1c). EGFR mutation testing was performed in this patient with wild type result. The patient developed progressively dyspnea and his condition deteriorated. Then, the patient died within 20 days of hospitalization.

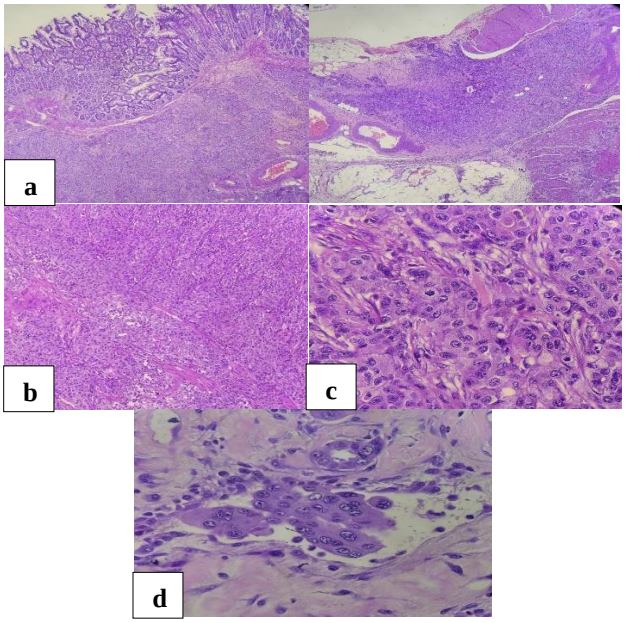

Figure 5: Microscopic image of resected small intestine specimen showing (a) tumor composed of neoplastic proliferation of epithelial cell, mostly form solid islands, infiltrate the submucosal layer and subserosal layer, no precursor lesion was identified (H and E 40x magnification); (b) cell morphology showed increase in nuclear cytoplasmic (N/C) ratio, 100x magnification; (c) mitotic count was high 17/10 HPF (400x magnification); and (d) lymphovascular invasion (400x magnification).

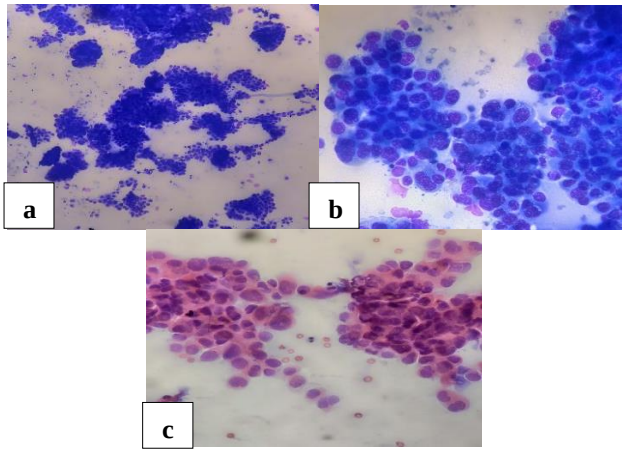

Figure 6: Cytomorphology of pleural fluid showing (a) atypical cell formed crowded sheet groups, morulae and acini (Diff-Quick 100x magnification); (b) cell morphology showed increase in nuclear cytoplasmic (N/C) ratio, (Diff-Quick 100x magnification); and (c) Papanicolaou staining 400x magnification.

DISCUSSION

Patient with lung cancer that present with metastasis disease is about 40% to many organs such as bones, liver and brain. But, lung cancer with symptomatic small intestinal metastasis case has rarely incidence and associated with very poor prognosis.[9,10] Small intestinal metastasis occurs mainly in advanced stage lung cancer.[11] Lung cancer with symptomatic small intestinal metastasis is relatively rare ranging from 0.2-0.5% in several studies.[5,7,8] Berger et all reported that only 0.5% patient with primary lung cancer developed small intestinal metastasis.[12] Kim et al revealed incidence of gastrointestinal metastasis in a study with 5239 patients was only 0,19%.[13] Yang et al also reported 1.77% incidence of gastrointestinal metastasis in primary lung cancer.[3] Nevertheless, autopsy data suggested higher prevalence of gastrointestinal metastasis of lung cancer than reported cases.[5,14,15] Lung cancer with gastrointestinal metastasis occurred in 4.7%-14% of all cases based on several autopsy studies.[6] Prognosis of metastatic in small intestine is worse than that in other locations. Taira et all stated that the survival time was 100.6 days (range 21-145 days).[16]

Rossi et all stated that intestinal metastasis from lung cancer is underdiagnosed.[10] Small intestinal metastases usually presents with nonspecific clinical findings such as intestinal obstruction, nausea, vomiting, abdominal pain or abdominal distension.[9,11] On physical examination, the clinical presentation is inconspicuous. Due to proliferation of cancer cells, small intestinal tumors manifest with serious clinical complications such as perforation, obstruction or massive hemorrhage.[5] In our case, patient complained of obstipation and abdominal pain. Abdominal examination showed distended abdomen with tympani but without palpable mass. Obstruction of small intestine was revealed by abdominal x-ray dan abdominal ultrasonography. Then the patient underwent an emergency laparotomy.

The common site of gastrointestinal metastasis is small intestine.[17] The mode by which lung cancer spread into small intestinal has not been thoroughly explained. Hematogenous or lymphatic routes have been thought to be potential pathogenic mechanism of gastrointestinal metastasis. Jejunum was the most common site of small intestine metastasis, as noted in 50.9%, followed by the ileum (33.3%) and duodenum (15.8%).[6,18] The most type of lung cancer that spread to gastrointestinal were squamous cell carcinoma followed by large cell carcinoma. Antler et all reported that only 8% of lung cancer which metastasis to gastrointestinal are classified as adenocarcinoma.[7,19] Study of Ryo et al reported that gastrointestinal metastases were detected in 1.8% of 1635 patient, showing its rarity.[20]

Laparotomy surgery is potential diagnostic due to nonspecific symptoms in some patients with small intestinal metastasis. Clinical findings with the

histological examination remains the gold standard for diagnosis metastatic lung cancer. In our case, histopathological examination from small intestine revealed a poorly differentiated adenocarcinoma without precursor lesion. The diagnosis of lung tumor was obtained from chest CT-scan showing tumor mass in the right inferior pulmonary lobe. Cytomorphology of pleural fluid revealed seeding of NSCLC tend to adenocarcinoma type. Sensitivity of diagnosis yield of pleural fluid cytology to determines the etiology was 87.9% for adenocarcinoma.[21] Diagnosis of lung adenocarcinoma was confirmed and most likely as the primary cancer. This conclusion is supported by the absence of precursor lesion in the small intestinal tumor that suggested a metastasis.

Further examination such as immunohistochemical staining should be performed to make definitive diagnosis of primary lung cancer with small intestinal as metastasis organ. Immunohistochemical staining method is reliable to differentiate a primary tumor and metastatic lesion. TTF-1 and Napsin-A are commonly expressed in primary lung adenocarcinoma.[7] The expression of CK20 and CDX2 are negative in lung adenocarcinoma, but documented in primary intestinal adenocarcinoma.[5,17,22] If we had checked immunohistochemical test, definitive diagnosis might have been made.

Small intestinal metastasis is often delayed before presenting life threatening complications which it requires emergency surgery.[14,17] Management strategy for lung cancer with symptomatic gastrointestinal metastasis remains controversial with some clinicians suggesting conservative management due to poor outcome. Otherwise, some authors recommended aggressive surgery. When the tumor is localized without extensive vascular invasion, surgical resection is indicated to prevent further complication.[14,15]

Guidelines recommendations for metastatic NSCLC treatment consider patient age, tumor history and performance status. Based on diagnosis stage IVB EGFR-wild type lung adenocarcinoma, platinum-based chemotherapy can be given as the first-line therapy. However, the performance status in this patient was poor, therefore palliative treatment is recommended with consideration of the age and patient's ability to tolerate toxicity of the treatment.[23] Yang et al reported that gastrointestinal metastatic was poor diagnosis with average time of death was 130 days.[3] This report also showed that lung cancer with intestinal metastatic had poor diagnosis which the patient died within 20 days of hospitalization.

CONCLUSION

Patient with advance primary lung cancer that had abdominal symptoms such as intestinal obstruction can lead diagnosis of metastatic lung cancer. In lung cancer, acute abdominal symptoms should be considered as metastasis to avoid underdiagnosis. Our report could serve as reminder that although rare, the possibility of lung cancer with small intestinal metastasis can occur regardless of their histological type. Active examination is needed to raise early detection and treatment. Nevertheless, the prognosis of this disease is poor and the survival rate extremely low.

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