

# A Rare Cause of Acute Abdomen: Small Intestine Perforation Due to Metastasis of Lung Cancer

## Nadir Bir Akut Batın Sendromu Sebebi: Akciğer Kanserinin İnce Barsak Metastazına Sekonder Perforasyon

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### ABSTRACT

Approximately 50% of lung cancer patients have distant metastases at diagnosis. Intestinal metastasis of lung cancer is quite rare and mostly asymptomatic as well. A 65-year-old male patient had been referred to a peripheral hospital with the complaint of abdominal pain. A mass lesion located on the apex of the right lung had been detected; as well as brain and abdominal metastases had been documented and oncotherapy had been planned accordingly. Several days later, he was referred to emergency surgery department due to the symptoms of acute abdomen. Tests showed hollow organ perforation, and the patient underwent operation later on. Perforation secondary to metastatic small intestine implant was observed per-operatively and so, small bowel resection was performed accordingly. The pathology revealed metastatic adenocarcinoma of lung cancer. The prognosis of lung cancer patients having bowel metastasis is poor with a low rate of survival. In this study, we aimed to present a case of metastatic lung cancer patient who had Acute Abdomen syndrome due to perforation secondary to small bowel metastasis.

**Keywords:** Acute abdomen, intestinal perforation, metastatic lung cancer

### ÖZ

Akciğer kanseri hastalarının yaklaşık %50'sinde tanı sırasında uzak metastazlar vardır. Akciğer kanserinin barsak metastazı oldukça nadirdir ve çoğunlukla asemptomatiktir. Altmış beş yaşında erkek hastanın karın ağrısı şikayeti ile başvurduğu periferik bir hastanede yapılan tetkiklerinde sağ akciğer apeksinde yer alan kitle lezyonu saptandı; beyin ve abdominal metastazları da bulunan hastaya onkolojik tedavi planlandı. Birkaç gün sonra, akut batın semptomları nedeniyle acil cerrahi birimine başvurdu. Yapılan tetkikler sonucu içi boş organ perforasyonu saptandı ve hasta ameliyata alındı. Operasyonda metastatik ince barsak implantına sekonder perforasyon görüldü ve bu nedenle ince barsak rezeksiyonu yapıldı. Patolojik değerlendirmesi, akciğer kanserinin metastatik adenokarsinomu olarak sonuçlandı. Barsak metastazı olan akciğer kanseri hastalarının prognozu kötü ve sağkalım oranı düşüktür. Bu çalışmada akciğer kanserinin ince barsak metastazına sekonder perforasyon nedeniyle Akut Batın sendromu gelişen bir hastayı sunmayı amaçladık.

**Anahtar Kelimeler:** Akut batın, ince barsak perforasyonu, metastatik akciğer kanseri

### Introduction

Approximately 50% of lung cancer patients have distant metastases at diagnosis. The most common organ metastases are the brain, liver, bones and adrenals. Approximately one third of lung cancer patients have symptoms due to distant metastases. Intestinal metastasis of lung cancer is very rare and usually asymptomatic (1,2). Most of the lung cancers causing intestinal metastasis are squamous cell carcinomas according to literature and it is followed by large cell lung cancer. In 70% of cases, extra-intestinal metastases are seen along with small intestine. Generally, bowel perforation and obstruction of the cases can be observed.

### Case

A 65-year-old male patient had been referred to a peripheral hospital because of abdominal pain. A mass lesion located on the apex of the right lung had been detected on his chest X-ray (Figure 1). Afterwards, further investigations had been done accordingly and many other widespread lesions had been observed located in brain and abdominal cavity which all were compatible with metastasis (Figure 2,3). The bronchoscopy procedure had been consistent with primary lung tumor. The biopsy confirmed adenocarcinoma. Radiotherapy along with anti-edema treatment (Dexamethasone 4\*4 mg, Levettirasetam 2\*500) had



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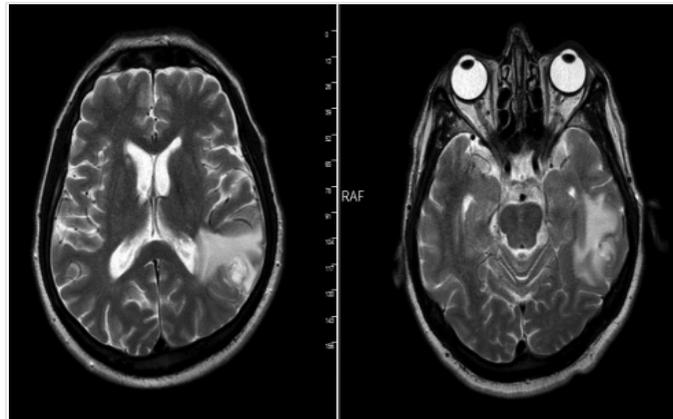
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been given for brain metastases. His chemotherapy had been postponed since he had had pneumonia after bronchoscopy.

Later on, he was admitted to our emergency surgery department with the complaint of abdominal pain prolonging for 3-4 days which had aggravated for the last day. Physical examination revealed acute



**Figure 1.** Posteroanterior chest X-ray showing free air under the diaphragm. Blue arrow showing the mass lesion located on the apex of the right lobe of the lung



**Figure 2.** Metastases in the brain left parietal and temporal lobes



**Figure 3.** Small intestinal wall thickening surrounded by free air in left upper quadrant. Free air in the abdomen

abdomen mimicking symptoms like widespread tenderness, defense and rebound during palpation. Plain graph showed free air under the right hemi-diaphragm. Oral/iv contrast-enhanced thoracic and abdominal computerized tomography (CT) revealed an image of pneumoperitoneum located mostly around anterior surface of the liver. No contrast extravasation was observed. Heterogenic mass lesion having an approximate diameter of 7\*6 cm was detected on apical segment of the right lung (Figure 4).

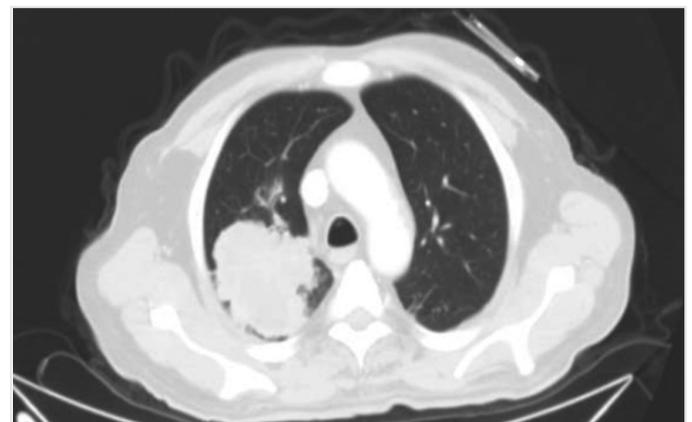
Necessary blood samples were taken during admission, and laboratory values were as follows; Hb/Htc: 9.4/28.9 White blood cell: 7000 C-reactive protein: 80. A detailed informed consent had been taken from the patient and his relatives after giving information about the risks and complications. Later on, he underwent operation due to pre-op diagnosis of hollow organ perforation.

After a laparoscopic exploration, the operation was converted to laparotomy due to dense adhesions which prevented adequate exposure. Abdominal exploration revealed a micro-perforation located on the anti-mesenteric site of the small bowel which was 190 cm distal to Treitz ligament. Multiple implants were observed along the serosa of the small bowel. All small bowel segments beginning from Treitz ligament till the ileocecal valve were explored carefully. Perforated small bowel segment was resected, and functional end-to-end anastomosis with stapler was performed accordingly. Afterwards, the patient was taken to intensive care unit for post-operative follow-up.

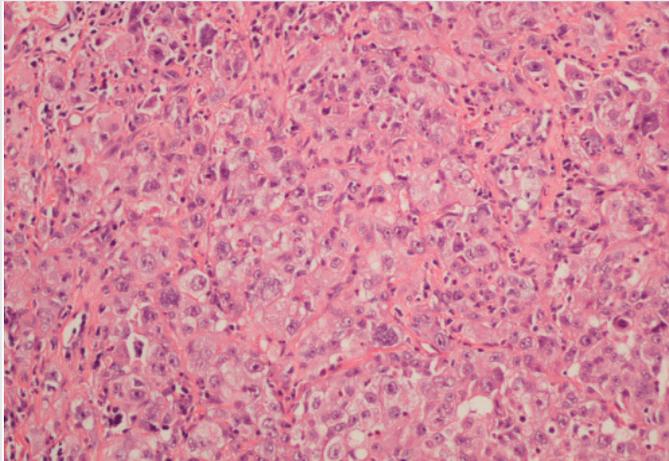
The patient was taken to the ward on the following day. Oral intake was initiated on the second day of operation. The patient did not have any problems during the hospitalization period and was discharged uneventfully. The patient was referred to the oncology department for systemic chemotherapy. He died 4 months after the surgery because of terminal disease. Pathological findings were consistent with adenocarcinoma metastasis of lung cancer (Figure 5,6).

## Discussion

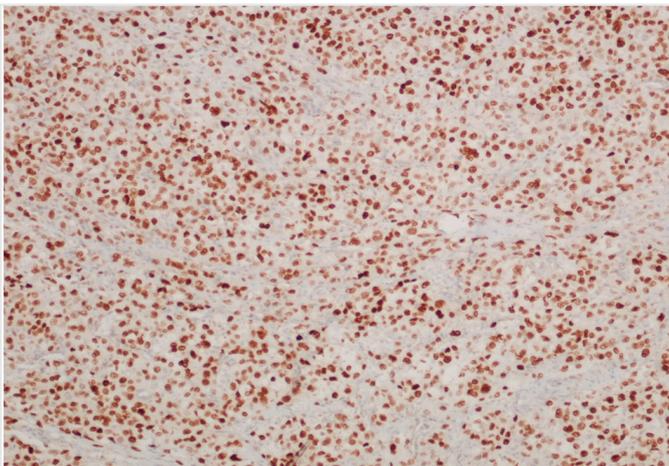
The most common sites for distant metastasis of lung cancer are the lymph nodes, liver, adrenal glands, skeletal system, and brain respectively. Gastrointestinal metastases are very rare (3,4,5,6). It has



**Figure 4.** Heterogen mass lesion with 75\*56 mm in widest place axially, starting from right lung



**Figure 5.** (A)X200. Hematoxylin and eosin. Lesion with prominent nuclear pleomorphism, nucleolus distinction, wide eosinophilic and few clear cytoplasmic cells. Small vacuoles are seen in cytoplasm, more prominent in some cells



**Figure 6.** X100. Thyroid transcription factor-1 immunohistochemistry stain. The staining in the nucleus indicates that the tumor is of lung origin

been reported in some autopsy studies that it has a prevalence range between 4.7% and 14% (7,8). In the present study, we discussed the clinical course of an adult male patient having small bowel perforation due to metastasis originated from a lung cancer. According to our research in recent literature, about 1/3 of the intestinal metastases originated from lung cancers are asymptomatic, and the diagnosis is usually made following the autopsy. Tumor necrosis induced by chemotherapy has also been claimed to have led to perforation. Gastrointestinal system metastasis of lung tumors occur via hematogenic and/or lymphatic route. Most common symptoms are abdominal pain, nausea/vomiting, anemia and weight loss (9-11). These findings mostly occur after the diagnosis of the primary disease and, sometimes, are seen before or simultaneously with the diagnosis of the primary disease as in our case. Yang et al. (12) scanned 399 lung carcinoma cases between 2003 and 2005, and found six (1.77%) cases who had symptomatic gastrointestinal system metastasis. The diagnosis was made by using gastroscopy for three patients who had gastric metastasis and by colonoscopy for one patient (cecum involvement), and two patients underwent operation due to small bowel perforation and intussusception respectively (13,14).

Histological subtypes of bronchogenic carcinomas leading to metastasis differ among studies regarding their frequencies. In one study, it was observed that large cell carcinoma of lung metastasized more than the others, whereas in other studies, squamous subtype was to be found more aggressive regarding metastasis. Yang et al. (12) reported squamous cell lung carcinoma to be the most common type of lung cancer having distant metastasis (15-17).

It is difficult to diagnose intestinal metastasis at an early stage before serious complications occur (18). Conventional CT, which is mostly the preferred imaging modality, has a low sensitivity to detect small intestine metastases. In some instances, certain indirect findings such as intestinal intussusception are more informative.

No significant pathology was detected after the evaluations done by the peripheral center. The patient was referred to our institute with the persistent complaint of abdominal pain later on. Pathological flourodeoxyglucose uptake in the region fitting ileum on positron emission tomography was helpful reaching the diagnosis. It was not clear whether the lesion was a primary tumor of the gastrointestinal tract or a metastatic lesion (19). Diagnosis was established later on by immunohistochemical examination of the specimen.

## Conclusion

The disease has a low rate of overall survey since it has an insidious clinical course despite distant metastasis mostly. Gastrointestinal metastases are very rare. It is difficult to diagnose intestinal metastasis at an early stage before complications occur. If the diagnosis is established at an early period, the life expectancy may be prolonged.

**Informed consent:** Written informed consent was obtained from the patient.

**Peer-review:** Externally peer-reviewed.

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## References

1. Hsing CT, Kim HY, Lee JH, Han JS, Lee JH, Chang JS, et al. Gastrointestinal metastasis from a primary adenocarcinoma of the lung presenting with acute abdominal pain. *Korean J Gastroenterol* 2012; 59: 382–5.
2. Akyildiz HY, Akcan AC, Sözüer E, Küçük C, Yılmaz N, Artaş T. Unusual causes of intestinal perforation and their surgical treatment. *Ulus Travma Acil Cerrahi Derg* 2009; 15: 579-83.
3. Di JZ, Peng JY, Wang ZG. Prevalence, clinicopathological characteristics, treatment, and prognosis of intestinal metastasis of primary lung cancer: A comprehensive review. *Surg Oncol* 2014; 23: 72-80.
4. McNeill PM, Wagman LD, Neifeld JP. Small bowel metastases from primary carcinoma of the lung. *Cancer*. 1987; 59: 1486-9.

5. Berger A, Cellier C, Daniel C, Kron C, Riquet M, Barbier JP, et al. Small bowel metastases from primary carcinoma of the lung: clinical findings and outcome. *Am J Gastroenterol* 1999; 94: 1884-7.
6. Garwood RA, Sawyer MD, Ledesma EJ, Foley E, Claridge JA. A case and review of bowel perforation secondary to metastatic lung cancer. *Am Surg* 2005; 71: 110-6.
7. Mao Y, Yang D, He J, Krasna MJ. Epidemiology of Lung Cancer. *Surg Oncol Clin N Am* 2016; 25: 439-45.
8. Siegel RL, Miller KD, Jemal A. Cancer statistics 2017. *CA Cancer J Clin.* 2017; 67: 7-30.
9. Pezzuto A, Mariotta S, Fioretti F, Uccini S. Metastasis to the colon from lung cancer presenting with severe hyponatremia and dyspnea in a young male: A case report and review of the literature. *Oncol Lett* 2013; 5: 1477-80.
10. Jevremovic V, Abboud A, Krauss S. Colonic Metastasis with Anemia Leading to a Diagnosis of Primary Lung Adenocarcinoma. *Case Rep Oncol Med* 2016; 2016: 5275043.
11. Bouzbib C, Chaput U, Jarrin I, Lavergne-Slove A, Marteau P, Dray X. "Bleeding from gastroduodenal metastases as the first manifestation of lung adenocarcinoma. *Endoscopy* 2014; 46 Suppl 1 UCTN: E474-5.
12. Yang CJ, Hwang JJ, Kang WY, Chong IW, Wang TH, Sheu CC, et al. Gastrointestinal metastasis of primary lung carcinoma: clinical presentations and outcome. *Lung Cancer J* 2006; 54: 319-23.
13. Pratto D, Resial M, Wulfson A, Gennaro M, Brarda M, Schmidt A. Jejuno-jejunal intussusception as presentation of a primary lung carcinoma: a case report. *Acta Gastroenterol Latinoam* 2012; 42: 50-2.
14. Kaswala DH, Patel NR, Shah SS, Razack RM, Fitzhugh VA, Brelvi ZS. Metastatic lung adenocarcinoma mimicking a colonic polyp. *N Am J Med Sci* 2013; 5:3 06-7.
15. Cedres S, Mulet-Margalef N, Montero MA, Martinez P, Martinez A, Felip E. Rectal metastases from squamous cell carcinoma: A case report and review of the literature. *Case Rep Med* 2012; 2012: 947524.
16. Travis WD, Brambilla E, Nicholson AG, Yatabe Y, Austin JH, Beasley MB, et al. The 2015 World Health Organization classification of lung tumors: impact of genetic, clinical and radiologic advances since the 2004 classification. *J Thorac Oncol* 2015; 10: 1243-60.
17. Frank CD, Roy HD, Lynn T, Rogerio CL. DeVita, Hellman and Rosenberg's Cancer: Principles & Practice of Oncology. 10th Edition. Wolters Kluwer Health Corp.; Philadelphia: 2015. Non-small Cell Lung Cancer; pp. 495-502.
18. Işık A, Eken H, Demiryıldız I, Yılmaz I, Fırat D, Çimen O, et al. Rectum, Lymphoma, Adenocancer. *Turk J Colorectal Dis* 2015; 25: 106-8.
19. Huang YM, Hsieh TY, Chen JR, Chien HP, Chang PH, Wang CH, et al. Gastric and colonic metastases from primary lung adenocarcinoma: A case report and review of the literature. *Oncol Lett* 2012; 4: 517-20.