

Case Report

# Solitary Colonic Metastasis from Primary Lung Carcinoma: A Case Report and Literature Review

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Lung cancer is the leading cause of cancer-related death worldwide. More than 50% of lung cancer cases are diagnosed with distant metastasis. However, metastatic lung cancers with only gastrointestinal tract involvement are very rare.

We report a 70-year-old male patient who presented with weight loss and an incidentally detected huge lung mass on chest radiography. Chest computed tomography revealed a huge mass in the hepatic flexure colon. The patient underwent resection for both the colon and lung masses subsequently. The pathologic report indicated an adenosquamous cell carcinoma that was suspected to be colonic metastasis from the primary lung cancer.

Although colonic metastasis from lung carcinoma is extremely rare, oncologists should consider the possible need different additional systemic treatments for colorectal carcinoma.

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## Key Words

Primary lung carcinoma;

Colonic metastasis;

Gastrointestinal tract metastasis;

Immunohistochemistry stain

Lung cancer is the leading cause of cancer-related death worldwide and in Taiwan. More than 50% of patients with lung cancer are diagnosed with distant metastasis initially.<sup>1</sup> The bones are the most common site of metastasis, followed by the brain, adrenal gland, and liver.<sup>2</sup> Gastrointestinal metastasis is rare, especially colonic metastasis, and most patients with colonic metastasis are asymptomatic. Herein, we report an uncommon case of colonic metastasis from primary lung carcinoma with incidental findings of a huge lung mass and colon tumor, which was initially suspected to be colon carcinoma with lung metastasis.

## Case Report

In July 2018, a 70-year-old man, with a history of type 2 diabetes mellitus and hypertension, was referred to our hospital for intermittent hemoptysis and a huge mass in the left upper lung on chest radiography (Fig. 1A). The patient also had gastrointestinal symptoms including decreased appetite, intermittent abdominal pain, chronic constipation, and weight loss of more than 7 kg in the last 6 months. Chest computed tomography (CT) revealed an 8-cm × 5-cm mass in the left upper lobe (Fig. 1B) and an 8-cm

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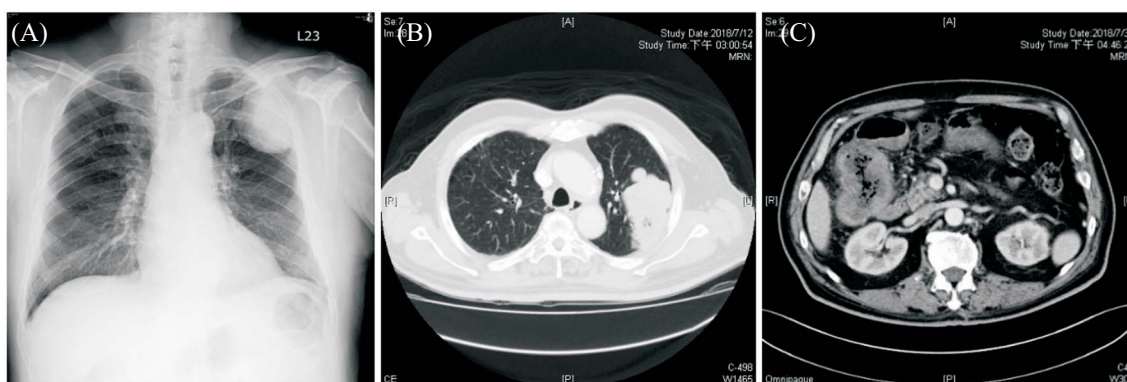
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hepatic flexure tumor with lymph node enlargement (Fig. 1C). Laboratory examinations revealed a white blood cell count of  $15.3 \times 10^3/\mu\text{L}$ , hemoglobin level of 11.4 g/dL, and a platelet count of  $420 \times 10^3/\mu\text{L}$ . A renal function test revealed a blood urea nitrogen level of 18.0 mg/dL and a creatine level of 1.48 mg/dL. Tumor markers revealed a carcinoembryonic antigen level of 2.50 ng/mL and squamous cell carcinoma antigen level of 5.60 ng/mL.

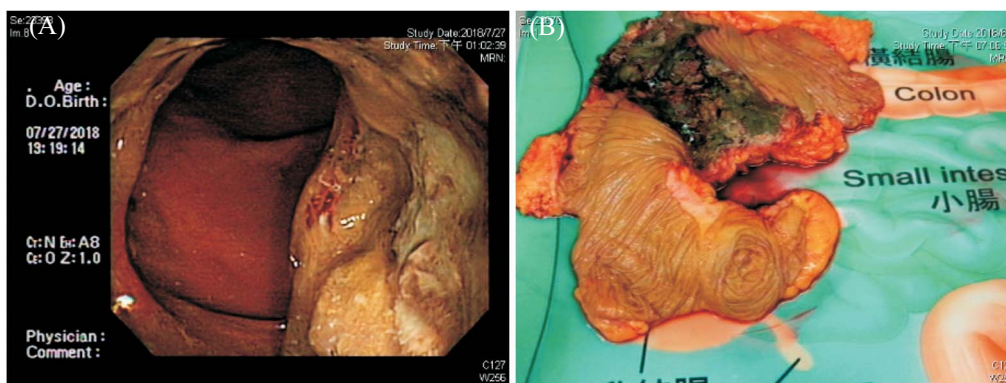
Colonoscopy revealed an annular ulcerative mass in the long segment of the hepatic flexure colon (Fig. 2A). Abdominal CT revealed an 8.68-cm tumor in the hepatic flexure colon with pericolic infiltration and multiple enlarged regional lymph nodes. Based on these findings, the preoperative diagnosis was primary hepatic flexure colon cancer with impending obstruction and lung metastasis, and the patient underwent subsequent right hemicolectomy and lymph node

dissection (Fig. 2B).

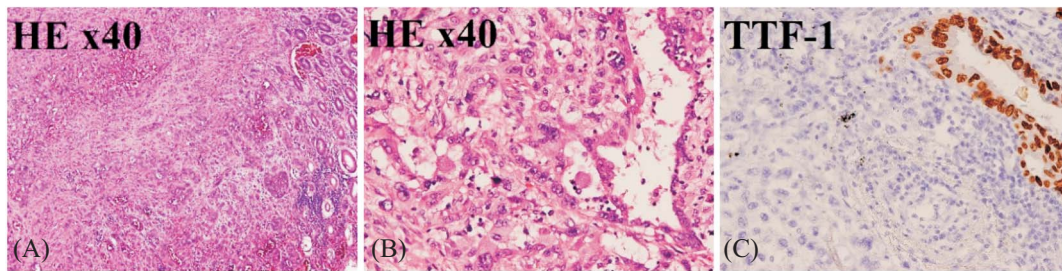
However, the pathology specimen revealed a poorly differentiated adenosquamous cell carcinoma without metastasis to the regional lymph nodes, and immunohistochemistry showed that the carcinoma cells were focally positive for P40, while CK20 and CDX2, which are usually expressed in primary colonic carcinoma, were all negative (Fig. 3A), indicating the less likelihood of colonic origin. The specimen revealed a poorly differentiated adenosquamous carcinoma with pleomorphic component, including conventional acinar-pattern adenocarcinoma and immunohistochemical study revealed positivity of thyroid transcription factor-1 (TTF-1) in acinar-pattern area, while squamous and pleomorphic components lacking expression of TTF-1 stain (Figs. 3B and 3C). The pathological findings suggested this colonic cancer are more likely to be a metastatic carcinoma of lung primary. The patient



**Fig. 1.** (A) Chest radiography revealed a lung mass in the left upper lobe. (B) Chest computed tomography revealed an 8-cm nodule in the left upper lobe. (C) Abdominal computed tomography revealed an 8- × 2-cm tumor in the hepatic flexure colon with lymph node enlargement.



**Fig. 2.** (A) An annular ulcerative mass in the long segment of the hepatic flexure. (B) The gross specimen from the right colon showed an annular ulcerative tumor.



**Fig. 3.** (A) The colonic specimen showed that the tumor invaded the muscularis propria into the pericorectal tissue ( $\times 40$ ). (B) The lung specimen was an adenosquamous carcinoma with a pleomorphic component ( $\times 200$ ). (C) The acinar component showed positivity for TTF-1 ( $\times 200$ ).

was referred to the Department of Chest Medicine for further chemotherapy and targeted therapy. Unfortunately, the patient died 4 months after the diagnosis of colonic metastasis from primary lung carcinoma due to pneumonia with profound sepsis.

## Discussion

The actual incidence of metastasis to the gastrointestinal (GI) tract is unknown, possibly owing to the absence of large-scale systemic analysis. Yoshimoto et al. reported that the incidence of GI tract metastasis was 11.9%, with the stomach being involved in 5.1% of cases, the small intestine in 8.1%, and the large intestine in 4.5%, based on the autopsy of 470 patients.<sup>3</sup> However, Kim et al. revealed that the clinical prevalence of GI metastasis was 0.19% among 5239 patients.<sup>4</sup> The difference in the incidence between clinical and autopsy findings maybe because most patients with GI metastasis were asymptomatic. In addition, symptomatic GI metastases are probably underdiagnosed because the symptoms are similar to the adverse effects of chemotherapy.

The symptoms of GI metastases are mostly non-specific, including abdominal pain, tarry stools, or bloody stools. Obstruction or perforation are relatively uncommon but life-threatening.<sup>3-6</sup> The most common histological subtypes causing GI metastases are squamous cell carcinoma and adenocarcinoma, but all subtypes have the potential to cause GI tract metastasis including pleomorphic carcinoma.<sup>5-10</sup>

In our experience, the colonic tumor was difficult to differentiate from primary colonic carcinoma under

colonoscopic exam. However, the pathology specimen revealed a poorly differentiated adenosquamous cell carcinoma without metastasis to the regional lymph nodes. Immunohistochemical features play a pivotal role in differential diagnosis between primary colonic carcinoma and pulmonary carcinoma with colonic metastasis. Lung carcinomas are usually negative for CK20 and positive for CK7, whereas CK20-positive and CK7-negative tumor cells are a feature of colonic carcinomas. TTF-1 is expressed in most of primary lung adenocarcinoma, whereas nonpulmonary adenocarcinomas are almost always negative for TTF-1.<sup>11</sup> For carcinoma with squamous differentiation, P40 is a highly sensitive and specific marker.<sup>12</sup> On the other hand, CDX-2 is a high specific marker for intestinal adenocarcinoma.<sup>11</sup> In our case, the pathological result of lung specimen revealed CK20-negative, CK7-positive, and focally immunopositivity of TTF-1 and P40, which were more suggestive of a primary lung carcinoma.

Primary lung carcinoma with GI metastasis has poor prognosis and overall survival.<sup>4,6-8,13</sup> However, owing to advances and improvement in chemotherapy, early detection and surgical intervention may provide palliation for patients and avoid life-threatening GI events including obstruction and peritonitis, possibly increasing long-term survival. However, further prospective studies are needed to determine the frequency of examinations and the timing for surgical intervention.

## Conclusion

Colonic metastasis from primary lung carcinoma

is rare, but oncologists should consider different additional systemic treatments for patients with colorectal carcinoma. Therefore, abnormal gastrointestinal symptoms in patients with a history of primary lung carcinoma need further examinations more frequently to allow early detection and treatment. Immunohistochemical staining is a valuable tool for differential diagnosis. In addition, early detection and surgical intervention improve clinical outcomes and survival.

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## 病例報告

# 原發性肺癌合併單一大腸轉移： 病例報告及文獻回顧

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肺癌為目前世界上癌症相關死亡的主因，約有百分之五十的病人在初診斷時已合併有遠端轉移。但轉移至腸胃道則相對而言比較少見。

我們在此分享一位七十歲男性，因體重減輕及胸部 X 光片顯示肺臟腫瘤求診，進一步胸部電腦斷層則發現合併有結腸肝曲處腫瘤。經手術切除大腸及肺臟腫瘤後，病理報告顯示為原發性腺鱗狀細胞肺癌合併大腸轉移。

原發性肺癌合併大腸轉移在臨床上十分罕見，但考量到後續治療與大腸癌治療不同，在臨床上應更加注意。

**關鍵詞** 原發性肺癌、大腸轉移、消化道轉移、免疫染色法。