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Case Report

Lung Metastases Presenting as Multiple Bleeding Ulcers in the Small Bowel: A Case Report

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Abstract

Introduction: Lung cancer is a leading cause of cancer mortality worldwide and approximately half of the patients are diagnosed at an advanced stage. Gastrointestinal metastases from lung cancer are very rare.

Case Report: Here, we present a case of a 73-year-old gentleman with gastrointestinal metastases from lung cancer, presenting as acute gastrointestinal bleeding from multiple bleeding ulcers in the small bowel.

Conclusion: Early detection of gastrointestinal metastases will help with determining clinical management. Whilst likely palliative in nature, treatment may incorporate surgical resection which if to be undertaken, should be performed early for prompt palliation of symptoms and improvement of quality of remaining life.

Keywords: bleeding ulcer; gastrointestinal metastases; lung cancer; malaena; small bowel
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Introduction

Lung cancer is a leading cause of cancer mortality both in Singapore and worldwide. Many of the patients are diagnosed at an advanced stage as they only present with symptoms when the tumour has invaded adjacent organs [1-3]. Furthermore, some of the symptoms such as persistent cough, fever and weight loss are not specific and could be neglected initially. As a result, approximately 50% have metastatic disease at diagnosis. The common sites of lung metastases include regional lymph nodes, brain, bone, liver and adrenals[4].

Gastrointestinal metastases from lung cancer are rare and although they have been found in up to 10% in autopsies[5], symptomatic incidences have only been reported to be around 0.2 to 0.5% [6, 7]. These metastases usually present as solitary nodules in the gastrointestinal tract. Here, we describe a unique case of a 73-year-old male who presented with melaena due to bleeding from multiple malignant ulcers in the small bowel that were metastatic from his lung cancer. To our knowledge, this is the first study reporting multiple (> 20) metastatic tumours to the small bowel from lung cancer.

Presentation of Case

A 73-year-old Chinese man who was a chronic smoker of more than 70 pack years, was diagnosed with adenocarcinoma of the left lung with right pulmonary metastasis (T2N1M1) in February 2014. His past medical history included hyperlipidemia, severe emphysema, and prostate cancer that was adequately managed with a robot-assisted laparoscopic prostatectomy. Palliative chemotherapy with pemetrexed and cisplatin was started and he received 2 cycles but this was discontinued due to a dropping haemoglobin count. His haemoglobin continued to fall from 11g/dL to 9.1g/dL (normal reference: 14.0 to 18.0g/dL) over three weeks despite two pints of blood transfusion. He had a normal coagulation profile with prothrombin and partial thromboplastin times of 11.0s (normal reference: 9.9 - 11.4s) and 29.3s (normal reference: 25.7 - 32.9s) respectively. When he presented with an episode of passage of black stools, he was referred to the surgical service. He denied abdominal pain, vomiting and haemetemesis. His parameters were stable, and the abdominal examination was unremarkable. A digital rectal examination revealed malaena and an urgent oesophagogastroduodenoscopy (OGD) was carried out the next day.

The OGD revealed a non-bleeding acute ulcer in the antrum, a tumour with an adherent clot and another oozing tumour at the third and fourth part of the duodenum respectively. Endoscopic haemostasis for the two bleeding duodenal tumours was performed with 15ml of adrenaline. His symptoms abated for a day after the endoscopic therapy but recurred and he was investigated with subsequent OGDs and a small bowel enteroscopy that found no further active bleeding but revealed multiple tumours in duodenum and jejunum. A CT mesenteric angiogram demonstrated a tumour blush in the mid-jejunum. This was similarly demonstrated by a tagged RBC scan that suggested a slow gastrointestinal bleed from the small bowel, likely from the jejunum. The patient continued to have intermittent malaena, with a continued decline in his haemoglobin count despite aggressive blood transfusion. A total of 9 pints of packed red cells were transfused over the week and multiple conversations with the patient and his family were conducted to advise for the need for prompt intervention.

The patient underwent an exploratory laparotomy and small bowel resection. At laparotomy, multiple (> 20)

small bowel tumours were noted (**Figure 1**). No active bleeding was observed. However, a large 3cm tumour was palpated in the mid-jejunum, corresponding to the estimated location of the tumour blush seen on the CT angiogram and tagged RBC scan. Multiple smaller tumours were also palpated. A segment of the jejunum measuring 1 metre, approximately 1 metre from the duodeno-jejunal junction, incorporating the supposed culprit tumour and adjacent smaller tumours, was resected, with reconstruction via a functional end-to-end anastomosis fashioned subsequently.

Figure 1 Segment of small bowel studded with numerous polypoidal lesions

Figure 2 Cut section through the lesion shows a whitish solid appearance with overlying haemorrhage, involving all layers of the small bowel and abutting the serosa.

Histological examination of the small bowel resection specimen revealed tumours consistent with multifocal high grade poorly-differentiated carcinoma involving the mucosa, submucosa and muscularis propria and abutting the serosa (**Figure 2**). The lesions on the small bowel specimen had architectural and cytologic resemblance to the primary left lung upper lobe biopsy (**Figure 3**). The absence of TTF-1 staining in the small bowel tumour required exclusion of other tumours, including sarcomas and lymphomas, for which immunostains were performed and these excluded. However, cytokeratin CAM5.2 reactivity and the morphologic resemblance of both tumours are in keeping with metastasis of the primary lung malignancy to the small bowel (**Figure 4**). All fourteen lymph nodes harvested were negative for malignancy.

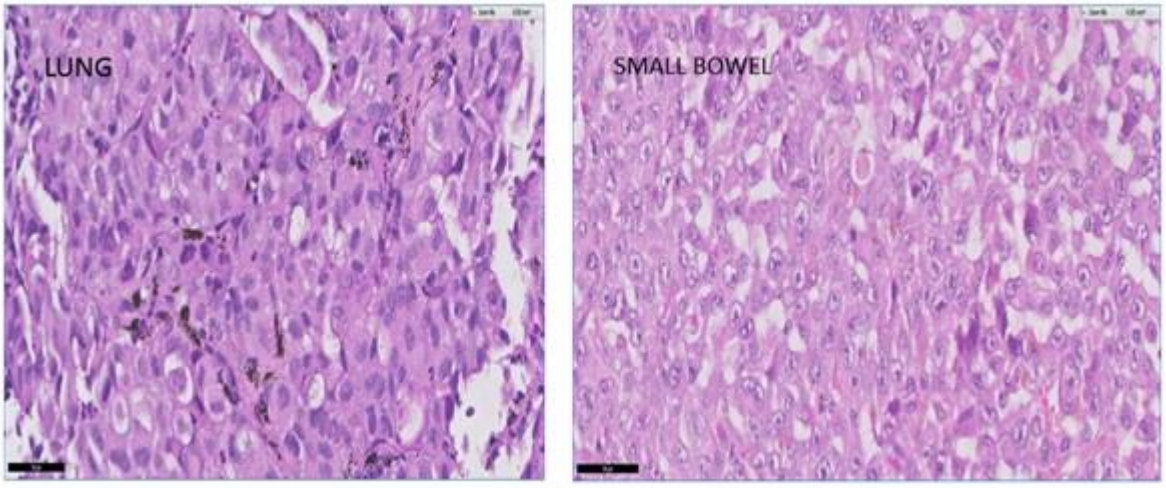

Figure 3 Small bowel lesion in comparison with previous transthoracic needle biopsy of the lung adenocarcinoma

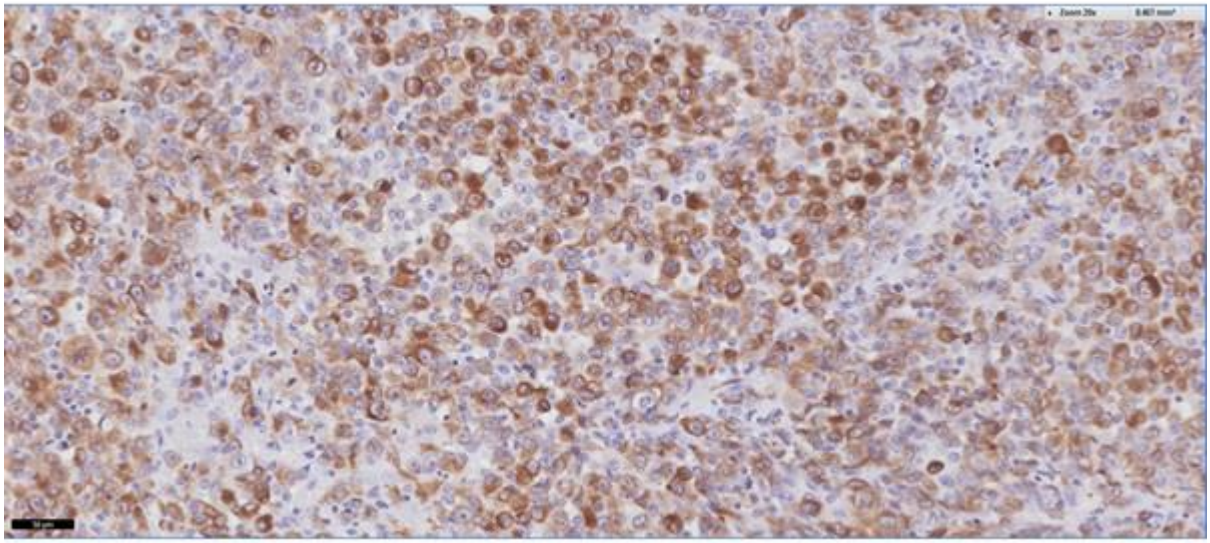

Figure 4 The tumour cells show immunoreactivity with low molecular weight cytokeratin CAM5.2

Post-operatively, the patient remained stable and had absence of malaena for 1 week. His haemoglobin level

was documented to be stable during this duration. However, on post-operative day 8, he had malaena again and this persisted, with continued drop in his haemoglobin count that necessitated multiple blood transfusions. A post-operative CT mesenteric angiogram revealed numerous polypoidal lesions in small bowel that were compatible with metastatic disease, but no active blush was seen to be extruding from any particular segment of the small bowel. Due to the site of lesions and nature of bleeding, the patient was also deemed unlikely to benefit from palliative radiotherapy. After a conference with the patient and his family, the patient requested for conservative management. The patient continued to deteriorate subsequently and passed away 1 month post-operatively, secondary to bleeding from multiple gastrointestinal metastases from lung cancer.

Discussion

Lung cancer is a leading cause of cancer mortality worldwide and almost half of the patients present with metastases at initial diagnosis. The preferential sites of extra-pulmonary metastases include regional lymph nodes, brain, bone, liver and adrenals[5]. While gastrointestinal metastases have been described at up to 10% in post-mortem cases, symptomatic cases of gastrointestinal metastases are rare at 0.2 to 0.5% [7]. Small bowel present the main site of metastases with sporadic cases reported in the stomach, large bowel and anus. The common presenting symptoms of gastrointestinal metastases include perforation, obstruction, malabsorption, and haemorrhage [4, 5, 7, 8]. Our patient presented with acute gastrointestinal bleeding from multiple ulcerated tumours in the small bowel. While there have been reports on small bowel metastases, the lesions are usually described as diffuse involvement of the intestinal mucosa, or a solitary mass with or without mucosa ulceration [9-12]. To the best of our knowledge, this is the first report of small bowel metastases presenting as multiple (>20) bleeding ulcerated tumours. There has only been one other group who has reported cases with more than one gastrointestinal lesion. Kim et al. studied 26 patients with gastrointestinal metastases from lung cancer and reported 5 with 2 lesions each [6].

The mechanism of small bowel metastases from lung cancer has been discussed by some authors. Some authors have reported squamous cell carcinoma as the most frequent histological type to cause small bowel metastases [5, 7] while adenocarcinoma has been observed as the most common subtype in other series [8, 12]. Tumour cells are thought to spread via hematogenous and lymphatic routes and tumour invasion in the small bowel can cause bowel obstruction, perforation due to tumour necrosis and ulcerative lesion bleeding [13, 14]. Extensive tumour replacement of normal bowel tissue can also lead to malabsorption.

Our patient presented with small bowel metastases two months after initial diagnosis of lung cancer. In the literature, small bowel metastases can present simultaneously at time of initial diagnosis and up to 108 months after with median time period of 1 to 3 months between GI and lung diagnosis [7, 9, 12]. However, no significant improvement in overall survival has been reported in patients diagnosed with small bowel metastases after a longer time interval [12]. Surgical intervention is indicated in symptomatic cases, especially in patients with bowel perforation presenting with an acute abdomen. The perioperative mortality rates range widely in most literature from 22% to 100% [5, 12, 14], with only one study by Berger et al. reporting no perioperative mortality [7]. In any case, small bowel metastasis is a dire prognostic sign signalling a late course in lung cancer. Survival following small bowel metastases is dismal and most patients die within 16 weeks of detection [7, 9, 12, 13].

With advancement of chemotherapy and supportive care, survival of lung cancer will continue to increase and we will likely encounter more symptomatic cases of gastrointestinal lung metastases. Although infrequent,

gastrointestinal symptoms from small bowel metastases can be the presenting feature in metastatic lung in most situations, management of the acute issue of bleeding, obstruction or perforation is necessary before further treatment of the underlying primary malignancy. An awareness that the lung cancer can present with symptoms from multiple metastatic gastrointestinal tumours and its likely course of disease progression and prognosis, would aid in clinical management, as well as allow an thoughtful and appropriate conversation with the patient and the family. Early detection of gastrointestinal metastases can help with the planning of treatment. Treatment depends on the fitness and expected prognosis of patient and usually includes surgical management of the offending gastrointestinal metastasis and subsequent chemotherapy. Surgical intervention is typically required for patients who present with life-threatening complications such as bowel perforation or as in our case, gastrointestinal bleeding. Resection may be carried out with a palliative intent or to potentially prolong survival in patients who have excellent tumour control and synchronous or metachronous solitary gastrointestinal metastasis. Some authors have reported improved survival in patients who undergo resection [15], with Kim et al. reporting a patient who remained disease-free for more than 5-years post- resection of a small bowel metastasis from the lung cancer, demonstrating that resection could be considered in properly selected patients [16].

Yuen et al. suggested that the toxicity of chemotherapy on rapidly dividing tissues could lead to increased risk of tumour necrosis and bowel perforation in lung cancer patients with gastrointestinal metastases on chemotherapy [17]. While the exact aetiology is still debatable, awareness of this possible complication is important and special attention should be paid when patients with gastrointestinal metastases present with acute abdominal pain during the course of chemotherapy. The ideal management of patients who present with this complication remains to be determined as the prognoses is uniformly bad and the goal is likely to be palliation and improvement of quality of life.

Conclusion

With the improvement in survival of lung cancer, clinicians may encounter more symptomatic cases of gastrointestinal metastases. Early detection of these metastases will help with determining clinical management. Whilst likely palliative in nature, treatment may incorporate surgical resection which if to be undertaken, should be performed early for prompt palliation of symptoms and improvement of quality of remaining life.

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