

Small bowel metastasis from lung cancer: a possible cause of acute abdomen. Case report and literature review

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SUMMARY: Small bowel metastasis from lung cancer: a possible cause of acute abdomen. Case report and literature review.

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Objective. Lung cancer represents the leading cause of tumor death in the world with 50% of patients presenting metastatic disease at the time of diagnosis. Gastrointestinal (GI) lung cancer metastasis were thought to be extremely rare, but a much higher incidence has been noted in several autopsic reports. Clinical relevance of GI metastasis is low, but can increase with the higher number of newly diagnosed patients and with the efficacy of systemic chemotherapy in advanced stages. Prognosis of complicated GI lung cancer metastasis seems to be worse than the natural course of the disease and acute bleeding or perforation of metastatic site can be accelerated by chemotherapy.

Case report. We describe the clinical case of a patient presenting with acute abdomen due to small bowel perforation from GI lung cancer metastasis. A review of the most recent published literature on GI lung cancer metastasis was performed.

Discussion. GI metastasis from lung cancer may occur within the clinical course of the disease and require surgical treatment followed by a poor outcome. Percentage of lung cancer patients with GI metastasis can reach level of 14%. Large cells carcinomas causing kidney and adrenal metastasis are more likely associated with GI localization of the disease.

Conclusions. Complications of GI metastases, although rare, must be considered as possible cause of acute abdomen in patients with lung cancer. Identification of clinical indicators of GI metastasis may help in the therapeutic strategy.

RIASSUNTO: Metastasi dell'intestino tenue da neoplasia polmonare: una possibile causa di addome acuto. Caso clinico e revisione della letteratura.

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Obiettivo. Il cancro del polmone è la principale causa di morte per neoplasia al mondo e il 50% dei pazienti presentano già alla diagnosi malattia metastatica. Le metastasi al tratto gastroenterico da neoplasia polmonare sono ritenute piuttosto rare, ma un'incidenza considerevole è riportata in alcune serie autopsiche. La rilevanza clinica delle metastasi gastroenteriche (GE) è piuttosto bassa, ma può aumentare se si considera l'alto numero di nuove diagnosi e l'efficacia della chemioterapia negli stadi avanzati. La prognosi delle complicanze da metastasi GE da cancro del polmone è peggiore del decorso naturale della neoplasia e il sanguinamento o la perforazione del sito metastatico possono essere accelerati dall'effetto della chemioterapia sistemica.

Caso clinico. Descriviamo il caso di un paziente con addome acuto da perforazione di ansa digiunale per metastasi da cancro del polmone. Segue la revisione della più recente letteratura sulle metastasi GE da neoplasia polmonare.

Discussione. Le metastasi GE da cancro del polmone possono manifestarsi nel decorso clinico della malattia e richiedono una terapia chirurgica gravata da prognosi infausta. La percentuale dei pazienti affetti da neoplasia polmonare che sviluppano metastasi GE può raggiungere il 14%. Il carcinoma a grandi cellule, che metastatizza ai surreni e ai reni, è più spesso associato anche alla localizzazione gastroenterica.

Conclusioni. Le complicazioni di metastasi GE, sebbene rare, devono essere considerate come possibile causa di addome acuto nei pazienti affetti da neoplasia polmonare. L'identificazione dei possibili segni clinici, anche predittivi, di metastasi GE può aiutare nella diagnosi e nella strategia terapeutica.

KEY WORDS: Lung cancer - Metastasis - Small bowel - Perforation - Acute abdomen - Surgery.
Cancro polmonare - Metastasi - Piccolo intestino - Perforazione - Addome acuto - Chirurgia.

Introduction

Lung cancer represents the leading cause of tumor death in the world with a 5 years survival range of 10-20% (1). Almost 50% of patients have metastatic disease at the time of diagnosis (2); the most commonly repre-

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sented sites of extra pulmonary tumor spread are represented by lymph nodes, liver, adrenal glands, brain and bones. Gastrointestinal (GI) lung cancer metastasis were thought to be extremely rare, considering the low rate of clinical presentation; despite that a much higher incidence has been noted when the number of cases is based on autoptotic reports (2-4). In fact, different autopsy studies show that in patients dying from lung cancer the frequency of GI metastasis can reach level of 14% (4, 5), and in this setting the small bowel represents the most common site of tumor localization.

Aim of this report is to describe a clinical case of GI lung cancer metastasis presenting as acute abdomen and identify possible factor predicting the development of GI metastasis and the related prognosis in lung cancer patients.

Case report

A 79 years old man, affected by lung cancer of the superior left lobe invading the anterior thoracic wall with bilateral adrenal metastasis, was admitted following the acute onset of diffuse abdominal pain. The patient was diagnosed with a stage IV lung cancer a month before admission and was addressed to supportive cares for the presence of ischemic cardiac disease, renal failure, advanced age and poor performance status.

Physical examination revealed abdominal tenderness and diffuse peritonism. Blood exams showed severe leucocytosis. Plain abdominal Rx revealed sub-diaphragmatic free air and CT scan confirmed bowel perforation.

At emergency laparotomy the evidence of proximal jejunal perforation required limited intestinal resection. Post-operative course was complicated by sepsis and respiratory failure, treated by mechanical ventilation on post-operative day 2. Unfortunately, patient developed massive left pleural effusion and acute on chronic renal failure, which lead him to death on the post-operative day 10.

Histopathologic examination of the resected jejunal loop demonstrated the presence of large cells lung cancer metastasis with immunohistochemistry positive to citokeratine 7, TTF-1 and negative to citokeratine 20, cromogranine and sinaptophysine.

Discussion

GI metastasis are more commonly caused by the abdominal spread of colonic, uterine or ovarian cancer; possible complications of bowel metastasis are bleeding, obstruction and perforation (6). Despite that, other primary malignancy can invade the intestinal tissue, including lung cancer of all histological variety, i.e. small cell carcinoma, adenocarcinoma, squamous cell carcinoma, and large cell carcinoma. The mechanism of lung cancer metastasis to the GI tract is common to other primary malignancy and it results from tumor cells spread via the haematic and lymphatic routes. Following the invasion of the mucosa and the deeper layers of the intestinal wall, lung cancer metastasis have the greater tendency to pro-

duce tissue necrosis and lumen perforation; this condition may be favoured and accelerated by systemic chemotherapy (7) and seems to be more common in large cells carcinoma compared to other histological types of primary lung cancer (6, 8-10).

GI localization of lung cancer was considered an exceptional finding no more than 10 years ago, due to the rarity of any clinical evidence of bowel metastasis in patients dying for pulmonary tumor. However, in more recent years different groups have published both autoptotic (3-5, 9, 11) and case reports (2, 6, 8, 12, 13) demonstrating that GI localization of lung cancer metastasis can be possible in a considerable percentage of patients. Yoshimoto et al. (9) reported a series of 525 autopsies over a period of 33 years at a single institution showing a rate of 11.9% of lung cancer gastrointestinal metastasis with a 6.2% of multiple cases. The principal tumor localization was the small bowel (8.1%) followed by the stomach (5.1%) and large intestine (4.1%). GI metastasis were most commonly related to a primary large cell carcinoma (30%) compared to other histological types and finally the higher association with other extra intestinal metastasis was found with kidney metastasis (29.1%) followed by adrenal metastasis (22.6%). Other autoptotic studies described similar findings with a prevalence of GI metastasis ranging between 4.7 and 14% (3, 4, 5, 11). The whole gastrointestinal tract may be interested by lung cancer secondarisms even if proximal small bowel represents the favorite site of pulmonary cancer metastases (11). Other sites of possible localization are the stomach, duodenum, cecum and appendix, distal large bowel and even the anus.

Clinical relevance of GI metastasis seems to be lower than the absolute number of patients identified at autopsy. A recent study from Taiwan (2) showed that only 6 patients over 339 (1.77%), diagnosed with lung cancer in 2 years, developed symptomatic gastrointestinal metastasis causing GI bleeding or perforation and requiring emergency laparotomy.

On the other hand, another large autoptotic study by Stenbygaard et al. (3) reports that GI metastasis may be expected in 2-8% of all non-small lung cancer patients, with an increasing percentage up to 38.7% (4) when considering only patients dying for large cells lung cancer. An interesting finding is also that patients with small bowel metastasis at autopsy tended to have a longer survival accompanied by a higher response rate to adjuvant therapy when compared to those without GI spread, possibly due to a longer time of being at risk for metastatic spread.

The main symptom derived by the presence of GI metastasis is represented by GI bleeding of various grades ranging from simple anemia and melena to significant GI bleeding requiring blood transfusion and surgical or radiological procedures. Another typical manifestation

of GI metastasis is bowel perforation, especially in gastric and jejunal tumor localization; acute abdomen is still a common finding in symptomatic GI metastasis, and is due to peritonitis from bowel perforation or occlusion from intraluminal tumor growth or bowel invagination. Infrequent symptoms, strictly connected to the site of metastasis and the involved organ, are epigastralgia, anal discomfort or acute appendicitis (7).

Esophageal metastasis are extremely rare, whereas direct tumor extension to the organ is very common, according also to autoptic reports (5). Proximal esophagus is generally affected by tumor infiltration or cancer diffusion from metastatic lymphatic chains. Most cases are asymptomatic or associated to mild symptoms of dysphagia.

Time between diagnosis of GI metastasis and death is generally very short, assessed by different authors in about four months (2), confirming that the clinical diagnosis of GI metastasis correspond with a very poor prognosis. In particular, survival after small bowel perforation is generally below 16 weeks (14), indicating that this site of metastasis represents a poor prognostic indicator of lung carcinoma. Respiratory failure, often due to pulmonary neoplasm, may irreparably complicate the course of patients underwent emergency surgery because of lung cancer complicated GI metastasis.

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Conclusions

The GI tract is an uncommon but not rare site of lung cancer metastasis. Clinical expression of bowel secondarisms happens in a small percentage of patients harboring lung cancer metastasis. Despite that, the increasing number of pulmonary cancers and the effectiveness of systemic chemotherapy in delaying tumor progression may increase the importance of diagnosis GI metastasis before their clinical expression. In fact our experience, according with many case reports, shows that emergency treatment of symptomatic bowel metastasis lead to a very poor prognosis. Moreover, chemotherapy can facilitate bleeding and perforation of bowel metastasis by inducing tumor necrosis, and it would be favorable to diagnose any possible GI site of metastasis before the beginning of a chemotherapy course.

From literature review seems that large cells tumors and cancer presenting with renal and adrenal metastasis are more commonly associated with bowel metastasis. In such cases physicians may consider or investigate other possible symptoms of bowel disease including blood stools and intermittent abdominal pain or occlusion to prevent acute complications and carefully consider the benefit of any further systemic therapy.

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