

# Small bowel perforation due to metastatic lung squamous cell carcinoma

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## ABSTRACT

Squamous cell cancer of the lung occurs with early dissemination but clinically significant metastases localized to the small bowel are rare. Small bowel metastasis is a fatal complication usually seen in advanced stages of the disease. In the present study, we report a case of a 65-year-old patient who was admitted to the emergency department with acute abdominal pain and during evaluation was found to have squamous cell carcinoma metastasis to small bowel leading to perforation. We also discuss the current management possibilities in the guidance of current literature.

*Saudi Med J 2007; Vol. 28 (4): 631-633*

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*Received 25th February 2006. Accepted 27th August 2006.*

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Squamous cell carcinoma accounts for 30-40% of lung cancers.<sup>1</sup> Approximately one half of patients with lung cancer have metastatic disease at the time of initial diagnosis. Although extremely rare, small bowel metastasis from lung cancer is a fatal complication usually seen in advanced stages of the disease.<sup>2</sup> In this article, we report a case of lung squamous cell carcinoma with small bowel metastasis and perforation together with a review of the literature and possible treatment strategies towards this fatal complication.

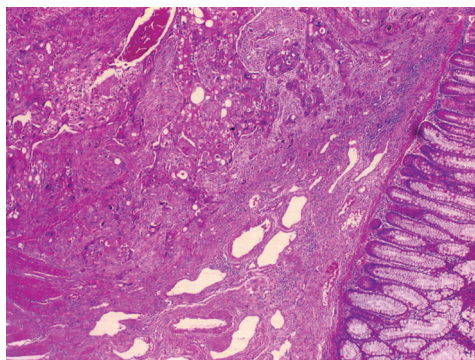
**Case Report.** A 65-year-old male admitted to our emergency department with severe abdominal pain. One year prior to his complaints, he was diagnosed to have lung squamous cell carcinoma and concomitant cranial metastasis, for which he has had 6 cures of chemotherapy and has begun radiotherapy. He has been receiving anti-edema treatment with dexamethasone and his complaints began 3 days prior

to admission. At the time of surgical consultation he was lethargic, his blood pressure was 110/80 mmHg, he had 120-beats/min tachycardia. He had been priorly right nephrectomized due to renal cell carcinoma. Laboratory results yielded a leukocytosis of 4000-10000/mm<sup>3</sup>. On biochemical analysis he had a seen prerenal azotemia. Abdominal ultrasound showed massive intrabdominal fluid and abdominal CT confirmed the fluid, which localized in the right lower abdomen. There was free air in the abdomen. Thus, laparotomy was performed with the initial diagnosis of viscus perforation. Intraoperative findings yielded a conglomerated mass formed by the small bowel together with the appendix. As the structures were dissected, a segment of 10 cm of ileum was seen to be necrotic and perforated 15 cm proximal to ileocaecal valve. The involved segment was resected, and due to intraoperative poor vital sign and comorbid factors after irrigation of the abdomen, a double-barrel ileostomy was performed in order to shorten the operative period. He was discharged on the 8th-day postoperative. Pathologic examination of the specimen yielded multiple foci of poorly differentiated squamous cell carcinoma invading serosa, subserosa, muscularis propria and also ulcerating the mucosa. It was considered as the metastasis of the primary illness (**Figure 1 & 2**).

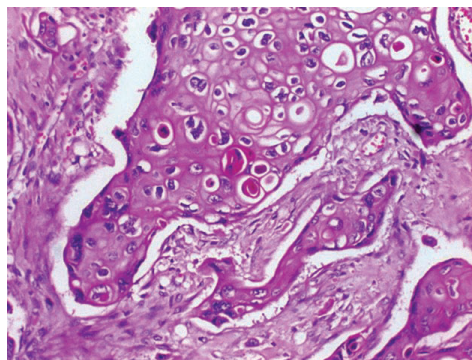
**Discussion.** Gastrointestinal tract metastases from primary carcinoma of the lung are more common than previously thought.<sup>3</sup> In recent literature, there are 36 metastatic lung cancer cases reported, which resulted in small bowel perforation and 5 of them were squamous cell cancer.

Despite the early and widespread dissemination of lung carcinoma, clinically significant metastases localized to the small bowel are rare (1.1%) and typically occur only in the advanced stages of the disease.<sup>4,5</sup>

The extent of metastatic disease in the natural



**Figure 1** - Squamous carcinoma cells invading the muscularis propria and submucosa underneath the normal small bowel mucosa (Hematoxylin & Eosin staining under x40 magnification).



**Figure 2** - Globus corneae are between the tumoral cells (Hematoxylin & Eosin staining under x200 magnification).

history of lung cancer correlates with its histological type (greatest for large and small cell carcinoma, least for squamous cell carcinoma).<sup>4</sup>

Gastrointestinal tract metastases from primary carcinoma of the lung may be associated with serious clinical complications.<sup>3</sup> Metastases to small bowel may present as perforation, obstruction, malabsorption, or hemorrhage or both. Tumor cells metastasizing from lung cancer to the bowel wall by hematogenous routes form a tumor mass,<sup>6,7</sup> which replaces all or part of the bowel wall and result in various symptoms. If tumor necrosis has occurred for any reason perforation may ensue.<sup>6</sup> If the mural tumor remains viable and grows into the bowel lumen, obstruction, instead of perforation, will occur. Furthermore, ulceration or erosion of the tumor may lead to gastrointestinal hemorrhage, and extensive invasion of the bowel wall by the tumor may lead to malabsorptive states.<sup>4</sup> McNeill et al<sup>7</sup> reported that small bowel perforation; more frequently result from metastasis of lung cancer than other primaries, possibly as these metastases have a tendency to undergo necrosis before attaining enough bulk to cause obstruction.<sup>7</sup> Perforation is the initial finding in the majority of patients with an unknown primary lung cancer.<sup>8,9</sup> Therefore, it has been recommended that when a metastatic tumor is found unexpectedly at laparotomy for perforated viscus in a heavy smoker after the fifth decade, lung cancer should be suspected as a potential primary.<sup>8-10</sup> Conversely, the etiology of perforated viscus in patients with lung cancer is likely to be metastasis to the small bowel, but the differential diagnosis should also include perforation of peptic ulcer, a colonic diverticulum, colon cancer, and appendicitis.<sup>4</sup>

Metastases to small bowel are usually encountered at the level of jejunum (79%),<sup>8</sup> however, our case is a rare event for a lung squamous cell carcinoma metastasis

to ileum. Patients with primary lung carcinoma who present with an acute abdomen should be treated by standard surgical principles irrespective of their primary pathology.<sup>11</sup> Aggressive investigation and early surgery is the only method for providing palliation to patients with primary lung carcinoma who present with an acute abdomen.<sup>4</sup> Management of these patients includes prompt initial resuscitation and stabilization of the patient, followed by exploratory laparotomy. During laparotomy if the only disease found is that of small intestinal perforation secondary to metastases, resection of the involved portion of the small bowel with primary entero-enterostomy is the procedure of choice.<sup>10</sup> Intestinal stoma can be used in patients with severe peritonitis, high comorbid factors and general morbidity. However, this is a strictly palliative procedure aimed to prevent immediate death secondary to peritonitis and sepsis.<sup>5</sup>

It is therefore not surprising that the prognosis in these patients was so poor, with most surviving less than 16 weeks after laparotomy.<sup>12</sup> Our case mostly meets the criteria as far as the literature is concerned. This case suggests that acute abdomen in an advanced disease such as ours should be treated according to proper surgical principles.

As a result, we kept in mind that viscus perforation in lung cancer patients may be related to the metastasis of lung cancer to the small bowel.

**Acknowledgment.** We are especially grateful to Prof. Mehmet Oğuz, MD for his never ending valuable contributions and patience in guiding us. His efforts cannot be overwhelmed in performing this case report.

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