Small bowel metastasis from primary lung cancer
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Section: Abdominal imaging
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Case Type: Clinical Cases
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Patient: 53 years, male

Clinical History:
A patient, who had previously been surgically treated for primary undifferentiated large cell lung cancer, presented with diffuse abdominal pain of abrupt onset. His abdominal roentgenogram showed dilated small bowel loops, suggestive of an intermittent small bowel obstruction.

Imaging Findings:
The patient presented with diffuse abdominal pain of abrupt onset. One year previously he had been surgically treated for primary undifferentiated large cell lung cancer, without receiving any adjuvant therapy. His abdominal roentgenogram showed dilated small bowel loops, suggestive of an intermittent small bowel obstruction. Apart from his detailed full blood count, which showed a mild increase in leukocytes, biochemical tests showed results within the normal range.
A single-contrast meal, using a low-density barium solution, was performed, in order to identify the cause of the intermittent small bowel obstruction. A remarkable distension of a jejunal loop below the ligament of Treitz was recognised, without identifying the level of obstruction, due to clumping of the contrast agent. An abdominal CT scan was subsequently performed, which showed distended small bowel loops and further below, a bulky lesion adjacent to the small bowel wall, probably arising from it and partially obstructing the intestinal lumen.

Discussion:
Metastatic disease from primary lung cancer is common in the course of lung cancer. Usual sites of metastases include the regional lymph nodes, liver, pleura, bones and brain. Even though some reports suggest that gastrointestinal metastases are more frequent than previously thought, they are still unusual and remain unsuspected, mainly due to absence of clinical symptomatology. The small bowel is an even more rare site of metastatic spread from primary lung cancer. In a series of 1399 patients surgically treated for primary lung cancer, only 0.5% developed clinically apparent small bowel metastases (1). Perforation, obstruction, malabsorption or gastrointestinal bleeding may be the main manifestations of this unusual metastatic disease (1).

The mode by which small bowel metastases occur from primary lung cancer has not been thoroughly explained. A potential pathogenic mechanism of small bowel metastasis could be summarised as follows: tumour cells from the lung primary metastasise to the bowel wall by haematogenous and lymphatic routes. Tumour mass replaces all or
part of the bowel wall resulting in various symptoms: viable bulky tumour causes obstruction, necrotic tumour perforates, ulcerative lesions bleed and extensive involvement of the mucosal surface could result in malabsorption (2).

Undifferentiated large cell and small cell carcinomas lead to gastrointestinal tract metastases more often than other histological types (3).

A diagnostic workup may initially include a single-contrast meal, an enteroclysis, or an abdominal CT scan, which may suggest the diagnosis. Push enteroscopy of the small bowel is more likely to establish the diagnosis, however, symptomatic small bowel metastases require a surgical approach, including resection of the involved small intestine with primary enterostomy.

In this case, push enteroscopy was ordered which showed an ulcerated large polypoid mass with irregular contour, located 80cm below the ligament of Treitz, causing significant eccentric narrowing of the enteric lumen. Biopsies that were obtained established the presence of metastatic disease to the small bowel caused by the primary undifferentiated large cell lung cancer. Resection of the small bowel metastasis with immediate anastomosis was performed. Biopsies of the surgical specimen reconfirmed the initial diagnosis, however biopsies of the regional lymph nodes were negative for metastatic spread.

Even though metastases to the small bowel from primary lung cancer carry a poor prognosis, the patient was still alive 18 months after the operation. His follow-up examinations for additional metastatic site of disease have been negative to date.

Conclusively, metastases to the small bowel should be included in the differential diagnosis of patients with primary lung cancer and abdominal pain.

**Differential Diagnosis List:** Small bowel metastasis from primary lung cancer

**Final Diagnosis:** Small bowel metastasis from primary lung cancer

**References:**

Figure 1

Description: Abdominal X-ray, showing distended small bowel loops. Origin:
Figure 2

Description: Single-contrast meal, using a low-density barium solution: presence of a distended jejunal loop, without evidence of the exact level of obstruction. Origin:
Figure 3

Description: A single-contrast meal, showing distended jejunal loops, without evident obstruction. Obvious clumping of the contrast agent (barium). Origin:
Description: Abdominal CT scan showing distended small bowel loops and further below (c), a bulky lesion adjacent to the small bowel wall, probably arising from it and partially obstructing the intestinal lumen. Origin:
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