

Table 1: Incidence of cell type causing gastrointestinal (Antler et al.) or small/large bowel (McNeill et al.) metastases

Histologic cell type	Antler et al. 1982 [6]: 58 gastrointestinal metastasis out of 423 cases	McNeill et al. 1987 [7]: 46 small/large bowel metastasis out of 431 cases
Squamous cell	19 out of 173 (11%)	15/5 out of 199 (10%)
Adenocarcinoma	6 out of 72 (8%)	13/6 out of 108 (18%)
Large cell	17 out of 87 (20%)	12/6 out of 31 (58%)
Small Cell	11 out of 48 (23%)	6/5 out of 73 (15%)
Others	5 out of 43 (11%)	0/2 out of 20 (10%)

tases in the small bowel are rare and typically occur only in the advanced stage of the disease [5]. But metastases to the gastrointestinal tract from lung cancer may not be as rare as thought according to autopsy series.

Antler et al. report in an autopsy series of 423 cases of primary tumors of the lung gastrointestinal tract involvement in 58 cases (14%) [6]. Out of these 58 cases, 14 were caused by direct extension of the tumor from the lung, 44 cases (10%) had distant metastasis without contact of the primary tumor to the gastrointestinal tract. The most common site of metastasis was the oesophagus (29 cases), followed by ileum (13 cases) and stomach (10 cases).

Mc Neill et al. reported in their autopsy study of 431 cases small/large bowel metastases without oesophageal/stomach metastases in 46 cases (11%) [7]. All patients with small bowel metastasis had at least one other site of metastatic disease with an average of 4.8 sites.

In an autopsy study of Burbige et al. 18 out of 147 (12%) patients with a diagnosis of primary carcinoma of the lung had metastatic lesions in the gastrointestinal tract [8]. Twelve of the 18 patients (67%) had signs or symptoms suggesting gastrointestinal involvement but only four were diagnosed premortem [8].

Mc Neill et al. and Antler et al. [6,7] report in their autopsy studies, the most common histologic type of lung tumor causing gastrointestinal tract metastasis was squamous cell, followed by large cell carcinoma as shown in Table 1. In all three autopsy studies large cell carcinoma is relative to the tumor incidence prone to small bowel metastasis [6-8].

Reviewing the literature between 1961 and 2003 we were able to document 58 clinically manifest metastasis to the small bowel [3,7,9-37]. One report even describes eleven cases in a thirteen year period in a single institution. This result strongly suggests that metastasis to the small bowel may not be as rare as thought.

Over 80% of patients with metastases to the small bowel were male, with ages ranging from 36 to 78 years with a median of 60 years.

Metastases to the small bowel may present as perforation (34/58; 59%), obstruction (17/58; 29%), six (10%) patients had haemorrhage, and in one patient (2%) the small bowel metastasis was discovered in a staging CT scan.

Of those patients with known location of metastasis (n = 38), 21 (55%) had jejunal metastasis, 12 (32%) ileal, three (8%) duodenal and two (5%) patient had both jejunal and ileal metastasis.

In 34 patients we were able to document the histological tumor type. Squamous cell carcinoma was the most common histological cell type (17/34; 50%) followed by large cell carcinoma (8/34; 24%) and adenocarcinoma (7/34; 21%).

In 7 (12%) patients the initial diagnose of lung cancer was discovered because of the abdominal symptoms, before any pulmonary disease was considered. Five out of these seven patients presented with abdominal perforation. This fact could retract the statement that particularly chemotherapy induces necrosis of the tumor cells which has replaced a portion of the small bowel wall, thus causing perforation of abdominal metastasis [21,23]. According to McNeill et al. lung cancer metastasis have a greater tendency to undergo necrosis compared with other malignant tumor metastasis [7]. Therefore, there may be a greater tendency for these metastases to cause perforation before attaining enough bulk to cause obstruction [7].

Phillips et al. [38] reviewed the literature for indications for laparotomy in 27 patients presenting with isolated small bowel metastases from extra-abdominal primary sites in a 22 year time period. The author found only six small bowel perforations and all six were in patients with carcinomas of the lung as primary site.