



UNIVERSITY of  
**ROCHESTER**  
MEDICAL CENTER

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### DEPARTMENT OF IMAGING SCIENCES

## Imaging Sciences Interesting Cases

### CASE 21

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**CLINICAL PRESENTATION:** Patient is a 75-year-old male who presented to the hospital with abdominal pain.

**IMAGING FINDINGS:** There is an ill-defined calcified mass with linear stranding radiate into the mesenteric fat in the right lower abdomen encasing the superior mesenteric artery.



**Figure 1**

**DIAGNOSIS: Carcinoid Tumor of the Small Bowel**

**DISCUSSION:** Carcinoid tumors are neuroendocrine neoplasms that can arise in various structures of the intestinal tract or bronchi. The most common location in which a carcinoid tumor occurs is the appendix. However, most symptomatic tumors arise in the small bowel.

Carcinoid tumor is the most common primary small bowel malignancy. The tumors grow slowly but cause a marked fibrotic response of the bowel wall and mesentery because the serotonin produced by the tumor induces an intense local desmoplastic reaction. The most common clinical presentation for a small intestinal carcinoid is periodic abdominal pain, which can be caused by fibrosis of the mesentery, kinking of the bowel, or intestinal obstruction. A constellation of symptoms called malignant carcinoid syndrome is often associated with this tumor. Carcinoid tumors of the ileum and jejunum, especially those larger than 1 cm, are most prone to produce this syndrome which include flushing, diarrhea, bronchoconstriction, and

endocardial fibroelastosis of the right heart. Patients with the syndrome almost invariably have hepatic metastases. Other common sites of metastatic spread include the regional mesenteric and para-aortic lymph nodes and lungs.

The etiology of carcinoid tumors is not known, but genetic abnormalities are suspected such as MEN 1 which is an autosomal dominant disorder characterized by the occurrence of multiple tumors, particularly in the pancreatic islets, parathyroid and pituitary glands, and neuroendocrine tumors.

CT findings that are pathognomonic of carcinoid tumor are:

1. "Spoke-wheel" pattern of the radiating soft tissue density in the mesenteric fat because of mesenteric fibrosis.
2. Bowel wall thickening.
3. Primary lesion appearing as a small, lobulated soft tissue mass, occasionally with central calcification, usually in the distal ileum.
4. Enlarged mesenteric lymph nodes and liver masses caused by metastatic disease.

Other modalities which have been used to detect carcinoid tumors include plain radiography, upper- and lower-GI radiography with the use of oral contrast agents, MRI, positron emission tomography (PET), scintigraphy with metaiodobenzylguanidine (MIBG) and octreotide, radionuclide imaging with somatostatin analogs attached to the radioactive tracer, and technetium-99m bone scanning. Depending on the location of the tumor and metastasis, a combination of these may be used.

#### **REFERENCES:**

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2. Singhal H, Saber AA, Zammit C, McLeod MK. Carcinoid tumor, intestinal. e-medicine. October 10, 2006. <http://www.emedicine.com/med/topic271.htm>