

# Metachronous Colon Metastases from Gastric Adenocarcinoma: A Case Report

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## Key Words

Gastric adenocarcinoma · Colonic metastases · CDX-2

## Abstract

The colon is a very rare metastatic localization. Here we report a case of colonic metastases from gastric adenocarcinoma whose clinical presentation was suggestive of a de novo adenocarcinoma of the ascending colon. The authors discuss that in the presence of a previous history of gastric cancer, immunohistochemical analysis on endoscopic biopsies may help in the definition of a differential diagnosis. Furthermore, this rare metastatic localization might suggest a poor prognosis and a more accurate diagnostic work-up.

## Introduction

Gastric carcinoma is the second cause of cancer death worldwide. Advanced stages of the disease may result in both synchronous and metachronous metastases. However, colonic metastases from gastric cancer are very rare. We describe a case of a signet ring cell carcinoma of the stomach metastasizing to the ascending colon ([fig. 1](#)).

## Case Report

In March 2008, a 77-year-old man followed up in our institution for gastric cancer was found to have an ascending colonic adenocarcinoma. Clinical history was positive for prostate acinar adenocarcinoma treated with radical prostatectomy in 2003 (pT2pN0, G2, Gleason 2 + 3, CK34–, BE12–) and chronic symptomatic nephrolithiasis. In January 2007, the patient had been first diagnosed with a gastric adenocarcinoma in our institution after presenting common symptoms including gastric bleeding and weight loss. At that time a routine work-up was performed including

esophagogastroduodenoscopy (EGDS) with biopsies and contrast CT scanning of the chest and abdomen. Imaging and pathology findings demonstrated the presence of an adenocarcinoma of the angulus. Notably, the preoperative CT scan showed small, multiple bilateral lung micronodules (maximum diameter 0.7 cm) deserving strict follow-up. Preoperative laboratory findings included anaemia, resulting from bleeding (Hb 9,4 g/dl), and CEA and Ca19-9 levels within the range. On January 26, the patient underwent subtotal gastrectomy and D2 lymphadenectomy. Macroscopic pathology examination reported the presence of 2 different ulcerated lesions of 2.5 and 1.0 cm in the longest diameter, respectively. The larger lesion infiltrated the entire wall to the serosa, while the smaller one infiltrated the submucosa. Final pathology identified an undifferentiated mixed adenocarcinoma with signet ring and intestinal differentiation, and a moderately differentiated adenocarcinoma of intestinal type, respectively. All margins were clear. Twenty-eight lymph nodes were isolated and 12 were found involved by metastatic dissemination. The stage was pT2b(m) pN2 (12/28) Mx (stage IIIA according to TNM, AJCC, ed. 6). Intraperitoneal cytology results were negative.

The patient received an adjuvant chemotherapy with fluorouracil plus folinic acid according to de Gramont regimen from March to September. During chemotherapy, the Ca19-9 levels were 74 IU/ml and a CT showed stable lung nodules and no evidence of local or metastatic disease relapse.

Just after the end of chemotherapy the patient presented at the follow-up visit with altered touch sensation of the right hand, recently occurring diplopia, a Ca19-9 of 111 IU/ml and a new CT-detected sub-centimetrical nodule of the left lung with no subsequent dimensional increase at follow-up. The patient was examined by a neurologist who diagnosed a mononeuropathy of the VI right cranial nerve; a brain MRI showed vascular encephalopathy. Later the patient developed pain to the left calf and thigh, foot neuropathy (tingling) and imbalance while walking with overall worsening of his performance status. A FDG-PET scan was performed showing a single area of pathological uptake to the ascending colon. This finding was confirmed by a colonoscopy demonstrating the presence of a neoplastic lesion typified as a poorly differentiated adenocarcinoma at pathology examination of biopsies. The Ca19-9 rose to 229 IU/ml.

Then the patient was referred to the division of general and laparoscopic surgery, and he underwent a right hemicolectomy with loco-regional node excision. The pathological examination demonstrated multiple mucosal and intramucosal localizations of poorly differentiated carcinoma with signet ring cell differentiation. Two out of 3 analyzed lymph nodes were metastatic. Immunohistochemistry showed positivity for cytokeratin 7 (CK7), and negativity for cytokeratin 20 (CK20), CDX-2 and CDX-3 ([fig. 2](#)).

One month later, the clinical picture was rapidly complicated with the worsening of neurological symptoms including facial nerve deficit, with right hypoacusis and swallowing disturbances and leg pain. Brain MRI showed progressing disease with complete obliteration of the right and part of the left Meckel's cavity, involvement of V facial nerve, and of the internal auditory conduct. A FDG-PET scan was positive on the right presacral lesion. Gamma knife and local radiotherapy were collegially discussed but not performed due to the poor performance status, and the patient was sent to best supportive care.

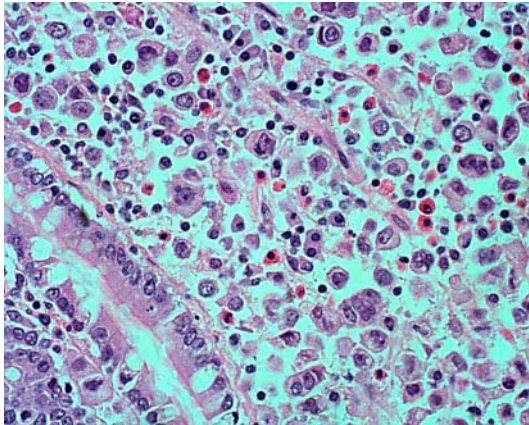
## Discussion

Metastases rarely involve the intestinal tract; however, post-mortem studies suggest a much higher incidence [1–5]. As a matter of fact, gut metastases have been extensively described for specific tumors such as melanoma, breast or lung cancer, and contiguous spreading of ovarian carcinomas [6–8].

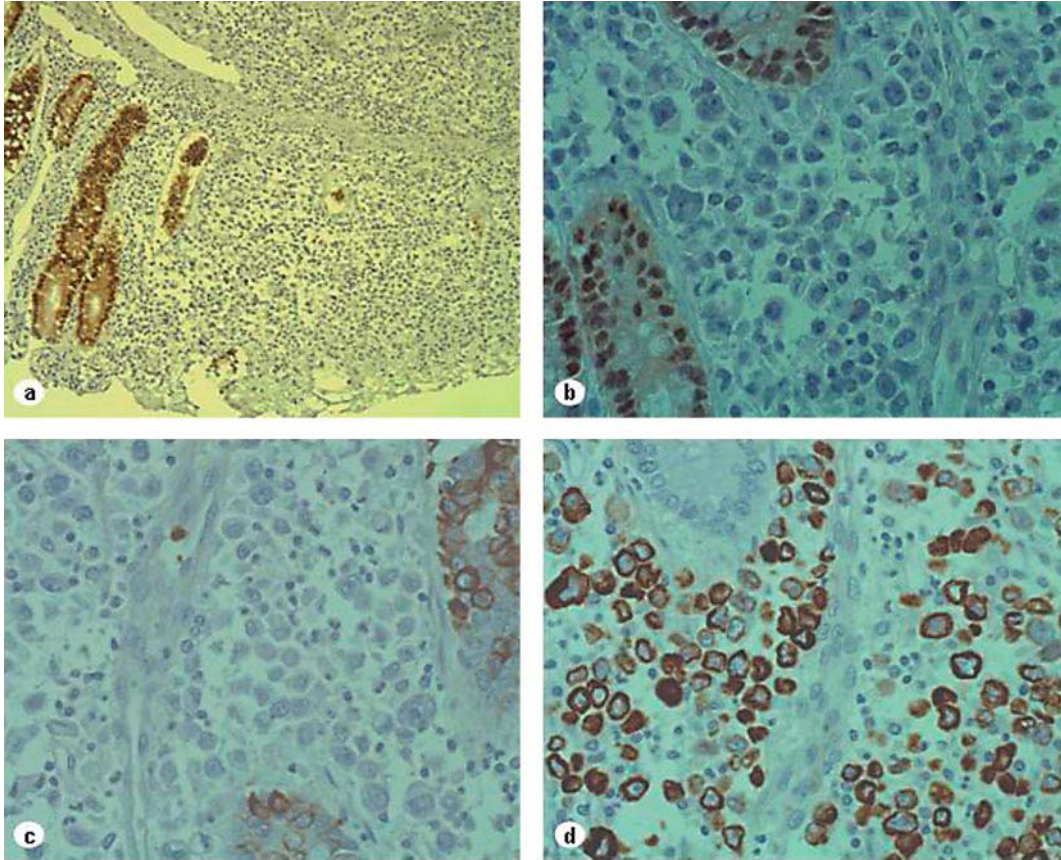
Intestinal metastases from gastric adenocarcinoma have been rarely reported [9–10]. Generally this unusual localization has been associated to Lauren's diffuse type histology, linitis plastica and peritoneal dissemination [5, 11]. In a retrospective radiological analysis of 23 cases of colorectal gastric cancer metastases, Jang et al. [5] found that primary tumors showed poorly differentiated adenocarcinoma with signet ring features in 7 cases (30.4%) and signet ring adenocarcinoma in 5 more cases (22%). Consistently among these cases, 9 (75%) showed linitis plastica. However, neither linitis plastica nor macroscopic peritoneal seeding was present in our patient at the time of the removal of the primary tumor and colorectal metastasis, respectively. When CT or different imaging techniques

such as PET scan show the presence of a colorectal neoplasia in a patient with positive clinical history for gastric cancer, a colonoscopy-guided biopsy should be considered, keeping in mind the possibility of a false negative result because of inadequate sampling in up to 54% [5]. A possible explanation may be that metastatic carcinoma usually preserves the mucosa, and the positive yield from endoscopic biopsy is low. Even with a deep biopsy specimen, the sparseness of tumor cells within the exuberant fibrosis may hinder the detection of linitis plastica [5]. In our case the diagnosis of a poorly differentiated adenocarcinoma suggested a primary colorectal cancer. CDX-2 and CDX-3 negativity suggested a non-colorectal origin of the tumor, confirmed by the negative CK20 staining [12]. In order to exclude a localization from prostate cancer, CK7 staining (which was positive) and an accurate revision of slides from the primary tumors were performed by the pathologist. These findings suggest that immunohistochemical profiling might prove useful in selected cases when a differential diagnosis must be assessed also on bioptic material. Nonetheless, gastric adenocarcinoma, especially if it is poorly differentiated or the signet ring cell type, should be considered as one of the common tumors that have the propensity for rare intestinal metastases.

**Fig. 1.** Right colon localization of gastric carcinoma. (Patient's surgical specimen). HE. ×40.



**Fig. 2.** Right colon localization of gastric carcinoma. (Patient's surgical specimen). Neoplastic tissue in the context of normal mucosa shows negative CDX-2 (**a**), CDX-3 (**b**), cytokeratin 20 (**c**), and positive cytokeratin 7 (**d**). **a**  $\times 20$ ; **b–d**  $\times 40$ .



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