

Perirenal neoplastic recurrence from adenocarcinoma of the gastric cardia

Published on 03.02.2016

DOI: 10.1594/EURORAD/CASE.13342

ISSN: 1563-4086

Section: Abdominal imaging

Area of Interest: Stomach (incl. Oesophagus)

Procedure: Staging

Procedure: Surgery

Imaging Technique: CT

Imaging Technique: Fluoroscopy

Special Focus: Neoplasia Case Type: Clinical Cases

Authors: Tonolini Massimo, M.D.

Patient: 45 years, male

Clinical History:

A 45-year-old male patient was initially diagnosed with gastric cardia tumour with supraclavicular nodal metastasis. Baseline positron emission tomography (PET) and serum tumour markers normalised after neoadjuvant chemotherapy.

Afterwards, he underwent complete gastrectomy with Roux-en-Y reconstruction plus lymphadenectomy. Surgical pathology reported residual pT1bN0 adenocarcinoma with negative peritoneal lavage, omentum and lymph nodes.

Imaging Findings:

Preoperatively, the residual tumour of the gastric cardia after neoadjuvant chemotherapy was depicted by multidetector CT with gastric distension by oral water and pharmacological hypotonisation (Fig. 1a, b), without extramural invasion, nodal or distant metastases.

Days after surgery, upper gastrointestinal series with water-soluble contrast medium documented complete gastrectomy with patent Roux-en-Y anastomosis (Fig. 1c).

Before adjuvant chemotherapy initiation, CT (Fig. 2) showed normal post-surgical status without any signs of neoplastic recurrence.

Currently, after three cycles of chemotherapy, repeated CT (Fig. 3) showed appearance of left-sided pleural effusion and atelectatic basal lung consolidation. Innumerable small-sized poorly enhancing solid masses consistent with metastatic deposits occupied most of the ipsilateral perirenal space, surrounding the kidney with delayed nephrographic appearance from probable vascular compression.

Despite second-line treatment clinical deterioration occurred. Further CT (Fig. 4) showed increased ascites, mesenteric adenopathies, appearance of small-sized liver metastases and decreased perirenal metastases. The patient ultimately passed away with the development of brain metastases.

Discussion:

Contrarily to the more common stomach tumours, adenocarcinoma of the gastric cardia (AGC) is increasingly encountered and typically associated with a dismal prognosis due to advanced disease at presentation and aggressive behaviour. The 5-year survival rates are 38% and 8% for stages I+II and III+IV respectively. Compared to distal cancers, AGC have mean larger size, and higher incidence of serosal invasion, lymphatic and blood vessel invasion, nodal and peritoneal metastases. Prognostic factors include surgical radicality, histological type and

differentiation, and TNM stage [1, 2].

Following surgical resection, AGC recurs in approximately 70% of patients within 2 years and mostly spreads intra-abdominally but with protean manifestations. Neoplastic recurrence may be locoregional 36% (including those in the distal mediastinum, the resection margins and the organ used for reconstruction), nodal (70%), peritoneal, distant (43-64%), or combined. Haematogenous metastases involve the liver (31%), peritoneum (17%) and lung (17%) in descending order of frequency [1, 2].

As this case exemplifies, occasionally tumour recurrence may selectively involve the perirenal space (PS), which is one of the main retroperitoneal compartments and contains the adrenal gland, kidney, proximal ureter surrounded by fat, bridging connective tissue and vessels. The PS may be reached through local spread from other compartments, particularly in lung cancers with mediastinal or pleural involvement. Alternatively, PS metastases may develop from lymphatic extension or by haematogenous dissemination due to its rich vascular supply. Isolated PS metastases are uncommon. Most often encountered in the setting of disseminated neoplastic disease, PS metastases have been reported in patients with melanoma, prostate, breast and gastrointestinal tumours [3-6]. In conclusion, when interpreting oncologic CT studies radiologists should remember that the PS may sometimes harbour distant metastases, which appear as multiple discrete soft-tissue masses with variable contrast enhancement depending on the histotype of the primary tumour [3-6].

Differential Diagnosis List: Perirenal metastases from resected adenocarcinoma of the gastric cardia., Lymphoma, Leukaemia/Plasma cell neoplasms, Castleman's disease, Extramedullary haematopoiesis, Idiopathic retroperitoneal fibrosis, Erdheim-Chester disease

Final Diagnosis: Perirenal metastases from resected adenocarcinoma of the gastric cardia.

References:

- Akturk O, Ulusoy C (2013) Prognosis in the cancer of the stomach. Intech Open Chapter 11:259-269
- Blomjous JGAM, Hop WCJ, Langenhorst LAM, et al. (1992) Adenocarcinoma of the gastric cardia. Recurrence and survival after resection. Cancer 70:569-574. (PMID: [1623472](#))
- Heller MT, Haarer KA, Thomas E, et al. (2012) Neoplastic and proliferative disorders of the perinephric space. Clin Radiol 67:e31-e41 (PMID: [22622354](#))
- Surabhi VR, Menias C, Prasad SR, et al. (2008) Neoplastic and non-neoplastic proliferative disorders of the perirenal space: cross-sectional imaging findings. Radiographics 28:1005-1017 (PMID: [18635626](#))
- Bechtold RE, Dyer R, Zagoria R, et al. (1996) The perirenal space: relationship of pathologic processes to normal retroperitoneal anatomy. Radiographics 16:841-854 (PMID: [8835975](#))
- Wilbur AC, Turk JN, Capek V (1992) Perirenal metastases from lung cancer: CT diagnosis. J Comput Assist Tomogr 16:589-591 (PMID: [1321175](#))

Figure 1

a



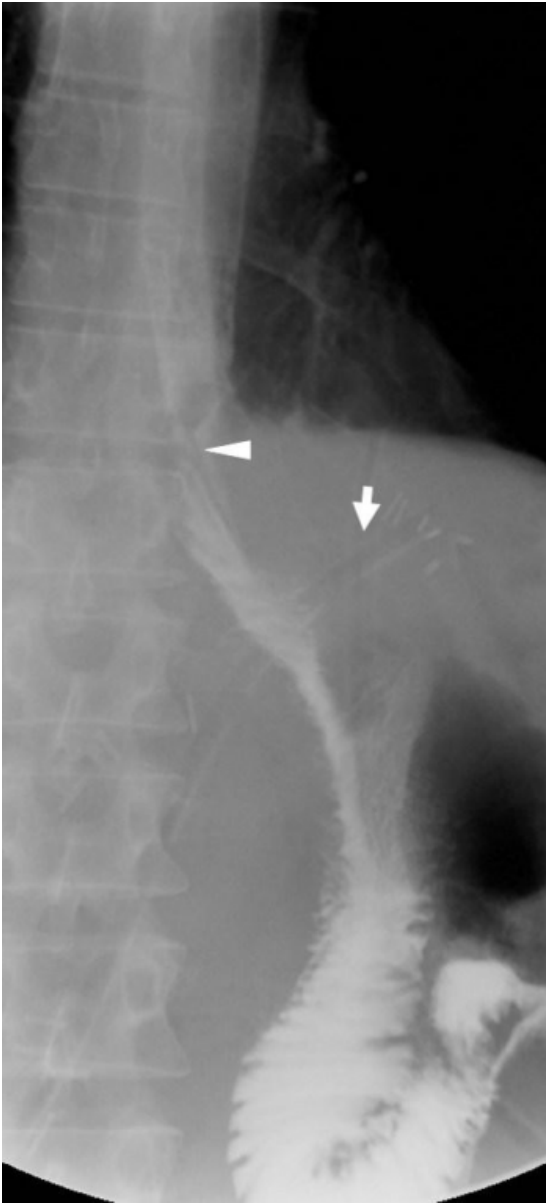
Description: After neoadjuvant chemotherapy, CT with gastric distension (oral water) and hypotonisation showed residual adenocarcinoma of the gastric cardia as focal enhancing mural thickening (short arrows) without extramural invasion. No nodal or distant metastases. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

b



Description: After neoadjuvant chemotherapy, CT with gastric distension (oral water) and hypotonisation showed residual adenocarcinoma of the gastric cardia as focal enhancing mural thickening (short arrows) without extramural invasion. No nodal or distant metastases. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

c



Description: A few days after surgery, upper gastrointestinal series with water-soluble contrast showed complete gastrectomy with patent Roux-en-Y anastomosis (arrowhead). Note drainage tube in place (short arrow). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

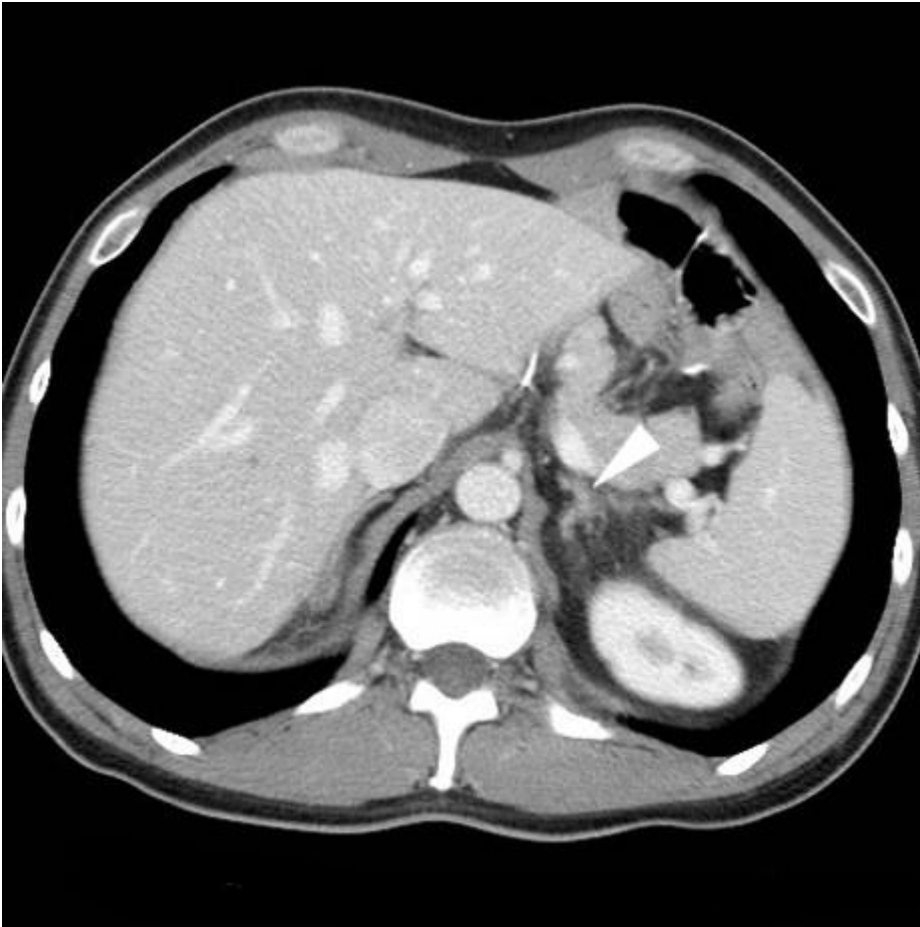
Figure 2

a



Description: Axial images in craniocaudal order showed normal post surgical status after complete gastrectomy and nodal dissection. Note metallic clips, normal left adrenal gland (arrowheads), no signs of recurrence or abnormality in the perirenal space. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

b



Description: Axial images in craniocaudal order showed normal post surgical status after complete gastrectomy and nodal dissection. Note metallic clips, normal left adrenal gland (arrowheads), no signs of recurrence or abnormality in the perirenal space. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

c



Description: Axial images in craniocaudal order showed normal post surgical status after complete gastrectomy and nodal dissection. Note metallic clips, normal left adrenal gland (arrowheads), no signs of recurrence or abnormality in the perirenal space. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

d



Description: Axial images in craniocaudal order showed normal post surgical status after complete gastrectomy and nodal dissection. Note metallic clips, normal left adrenal gland (arrowheads), no signs of recurrence or abnormality in the perirenal space. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

Figure 3

a



Description: Coronal images (a...c) showed appearance of left-sided pleural effusion (+) and atelectatic basal lung consolidation, mild pelvic ascites (*), left kidney surrounded by small-sized poorly enhancing solid masses (arrows) occupying most of the perirenal space. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

b



Description: Coronal images (a...c) showed appearance of left-sided pleural effusion (+) and atelectatic basal lung consolidation, mild pelvic ascites (*), small-sized poorly enhancing solid masses (arrows) occupying most of the perirenal space. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

c



Description: Detail coronal image showed delayed nephrographic phase of left kidney surrounded by small-sized poorly enhancing solid masses (arrows) occupying most of the perirenal space. Note ipsilateral pleural effusion and atelectatic basal lung consolidation. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

d



Description: Axial detail images (d..f) showed delayed nephrographic phase of left kidney surrounded by small-sized poorly enhancing solid masses (arrows) occupying most of the perirenal space. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

e



Description: Note small-sized poorly enhancing solid masses (arrows) consistent with metastatic deposits occupying most of the perirenal space, one (arrowhead) in the site of the lateral arm of the adrenal gland. **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

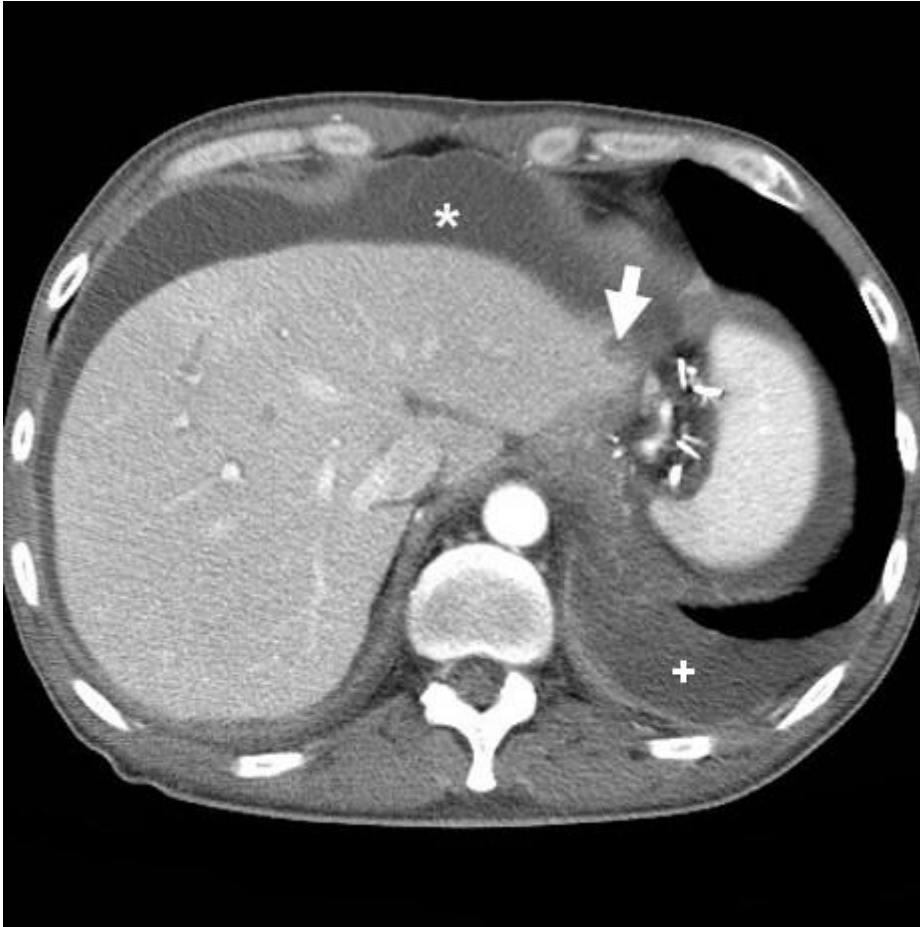
f



Description: The delayed nephrographic appearance of the left kidney was attributable to hypoperfusion from metastatic deposits (arrows) compressing the vascular pedicle. Note mildly prominent mesenteric lymph nodes (thin arrow). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

Figure 4

a



Description: Three months later, repeated CT showed persistent pleural effusion (+), increased ascites (*), appearance of 4 small-sized hypovascular liver metastases (short arrows). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

b



Description: Three months later, repeated CT showed persistent pleural effusion (+), increased ascites (*), appearance of 4 small-sized hypovascular liver metastases (short arrows). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

c



Description: The metastatic deposits of the left perirenal space appeared to be decreased in number and size. Note ascites (*). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)

d



Description: The metastatic deposits of the left perirenal space appeared to be decreased in number and size. Additionally, increased size of some mesenteric lymph nodes (thin arrows) was noted. Note ascites (*), small-sized liver metastasis (short arrow). **Origin:** Tonolini M, Radiology Department, "Luigi Sacco" University Hospital – Milan (Italy)