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Splenic metastasis from gastric adenocarcinoma: A rare case

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ABSTRACT

INTRODUCTION: Isolated splenic metastasis are very rare. There are only a few reported cases of patients with isolated splenic metastasis from gastric primary tumors.
PRESENTATION OF CASE: We present a case of a 71-year-old patient with isolated splenic metastasis, diagnosed 6 years after primary treatment of a gastric adenocarcinoma, who previously had a lung resection also for metastasis. The patient was submitted to chemotherapy and then to splenectomy. The patient is alive and has no evidence of disease 7 months after splenectomy.
DISCUSSION: We discuss the theories that explain the rare event of splenic metastasis, the route of metastization, the workup, treatment and survival of patients with isolated splenic metastasis. To the best of our knowledge, our case has the second longest interval from the primary diagnosis of gastric cancer to the diagnosis of splenic metastasis.
CONCLUSION: In cases of isolated splenic metastasis from gastric adenocarcinoma, fit patients should be considered for splenectomy, since there are reports of good patient survivals.

1. Introduction

Splenic metastasis are uncommon.[1–4] The largest studies on autopsy reports from patients with non-haematogenous tumors, stated a 0.3–7.3% rate of splenic metastasis.[2] In most cases, this happens as part of disseminated multi-organ disease.

The most frequent primary tumors metastasizing to the spleen are breast, lung, ovary, colorectal, skin and gastric.[1–3,5] The latter are reported with an incidence of 6.9%.[2]

Isolated splenic metastasis are very rare, with only a few reported cases of patients with primary gastric tumors.[6]

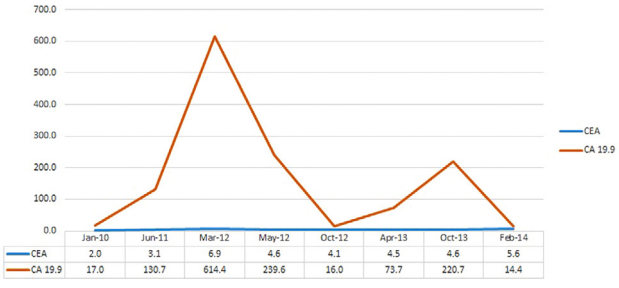
The authors present a case of a patient with isolated splenic metastasis from primary gastric adenocarcinoma.

2. Presentation of case

A 71-year-old man underwent a total gastrectomy with D2 lymphadenectomy and Y-Roux reconstruction for a distal small curvature gastric cancer, in 2005. Histologic report confirmed a well differentiated adenocarcinoma, Laurens's intestinal type and 28 non-metastasized lymph nodes – final staging pT3N0M0. He was not proposed to chemotherapy.

After 6 years of follow-up, it was noted an elevated CA19.9, with normal CEA (Graphic 1 – June/2011). Computerized tomography (CT) scan revealed an isolated nodular lesion on the left superior lobe of the lung (Fig. 1). After two attempts of percutaneous biopsy (both yielded insufficient tissue), it was decided to proceed with surgical excision. On December/2011 he was submitted to a left superior lobectomy. Histology confirmed a gastric adenocarcinoma metastasis with complete excision.

Three months after the pulmonary surgery, the patient presented an even greater rise of CA19.9 (Graphic 1 – March/2012). CT scan showed a splenic formation with undetermined meaning. At this point it was decided to perform a positron emission tomography–computed tomography (PET–CT) scan which revealed two active spots – one on the left lung related to the previous surgery (a false-positive) and the other one on the spleen (Fig. 2).[7,8] On Oncology Group (OG) discussion, these findings were



	Jan-10	Jun-11	Mar-12	May-12	Oct-12	Apr-13	Oct-13	Feb-14
CEA	2.0	3.1	6.9	4.6	4.1	4.5	4.6	5.6
CA 19.9	17.0	130.7	614.4	239.6	16.0	73.7	220.7	14.4

Graphic 1. Tumoral markers evolution since Jan/2010, 6 years after the primary gastric surgery.

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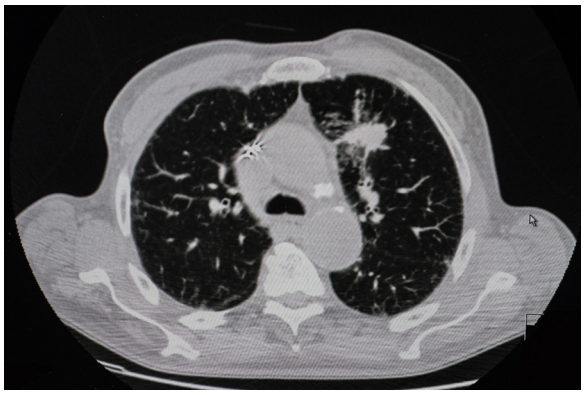

Fig. 1. Image of CT scan showing a pulmonary nodule, with 28 × 19 mm, speculated and irregular, suspected of metastasis.

interpreted as disseminated disease and it was proposed palliative chemotherapy.

After 6 cycles of epirubicin, oxaliplatin and capecitabine (EOX), which terminated on October/2012, CA19.9 normalized and the patient remained asymptomatic. The OG decided to keep a supportive treatment.

On April/2013 the patient had another CA 19.9 elevation with an 18 mm splenic lesion on CT scan, compatible with previously diagnosed metastasis.

On August/2013 the patient remained asymptomatic although the splenic lesion grew to 25 mm (Fig. 3), with no evidence of other metastasis.

The apparently indolent evolution of the disease and the good physiologic status of the patient, promoted the OG decision to perform splenectomy.

The surgery was performed on the 21/November/2013. Intraoperatively it was seen a hard nodule on the inferior pole of the spleen, with extension to the hilum. No other lesions were noted. The post-operative period was uneventful and the patient was discharged at the 4th day after surgery.

The pathological examination confirmed the presence of a 25 × 15 × 10 mm nodule, with hilar and capsule invasion, with histological morphology of an adenocarcinoma. After immunohistochemical study and pathological comparative review of the primary carcinoma, the lesion was deemed most likely to be a gastric adenocarcinoma metastasis (Figs. 4 and 5). There were two other metastatic nodules, with 15 and 10 mm, located in the splenic parenchyma, independent from the first nodule and with no capsule invasion.

Again, he was proposed chemotherapy with EOX.

At present, the patient is receiving chemotherapy with very good tolerance and has no evidence of disease.

3. Discussion

From the early 20th century there have been explanations stating that there are obstacles preventing tumoral cells from reaching the spleen. These include the sharp angle of the splenic artery with the celiac trunk and the rhythmic contraction of splenic sinusoidals. As we know from present knowledge, the success of metastization seems to be much more dependent on the local microenvironment on which the tumoral cells lodge, and the interactions between them.[9] The spleen seems to be hostile to the growing of clinical metastasis, probably related to its immune function. For 6 years our patient had “dormant” cells or micrometastasis that suddenly started to grow. To the best of our knowledge, our case has the second longest interval from the primary diagnosis of gastric cancer to the diagnosis of splenic metastasis.[6,10]

The usual suggested route of metastization is hematogeneous related to parenchymal location of the metastasis and no capsule invasion. On our case, there were two small parenchymal metastasis with no capsule invasion, but the biggest metastasis had capsule

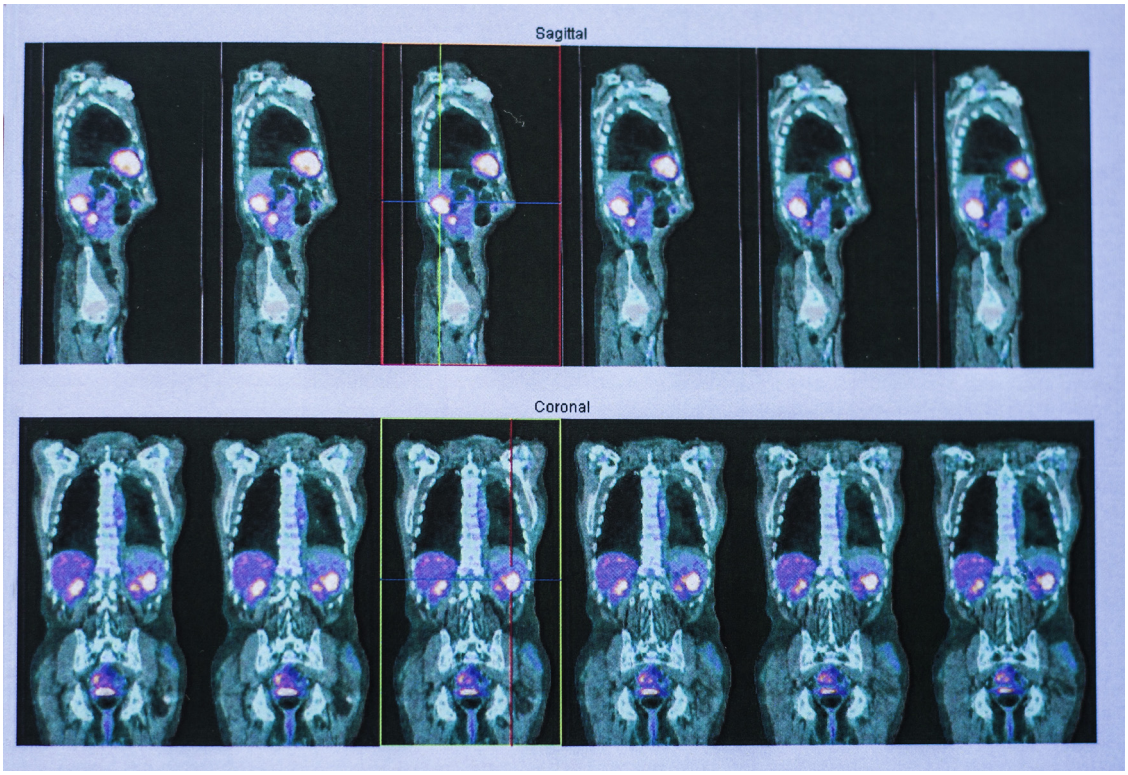

Fig. 2. Image of PET-CT showing a splenic hot spot, suspect of metastasis.

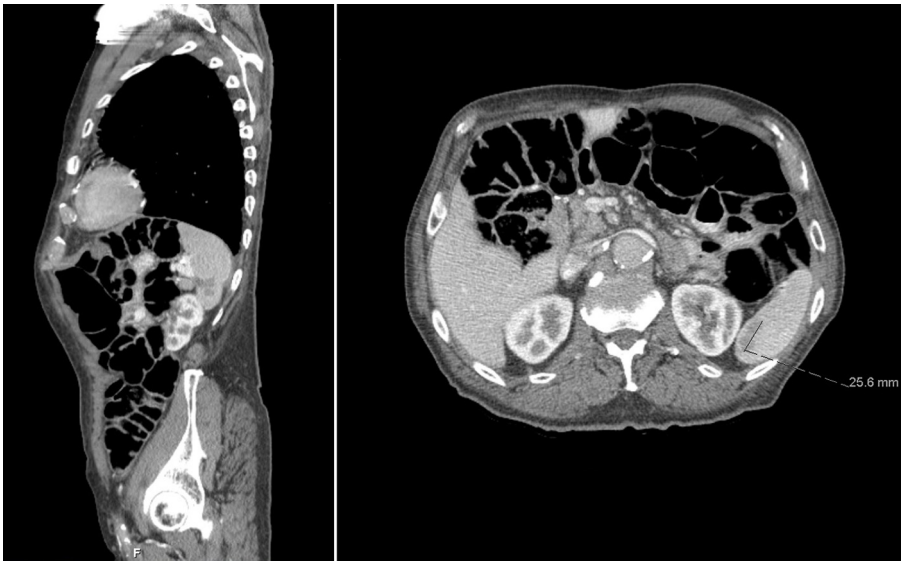

Fig. 3. Image of CT scan showing a 25 mm splenic lesion, near its inferior pole, compatible with metastasis.

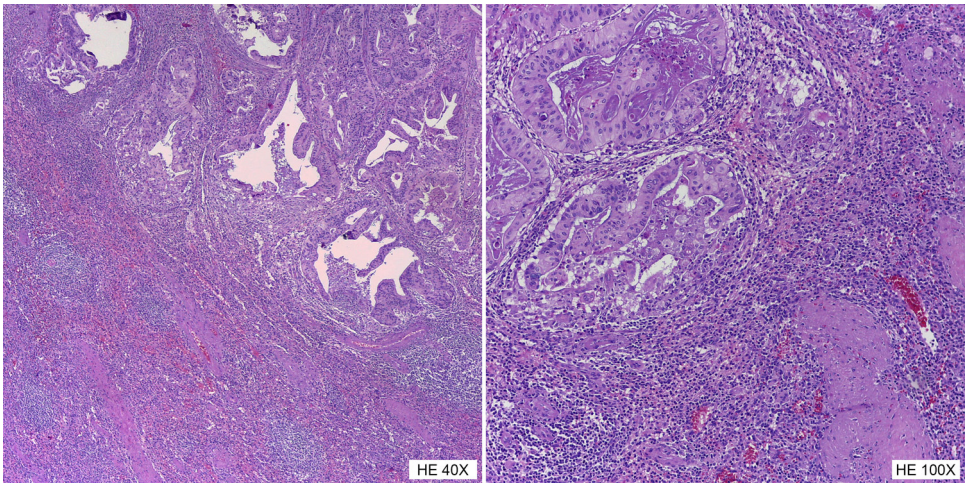

Fig. 4. H&E 40× and 100× – moderately differentiated adenocarcinoma, infiltrating the splenic parenchyma and inducing a mild desmoplastic and inflammatory reaction.

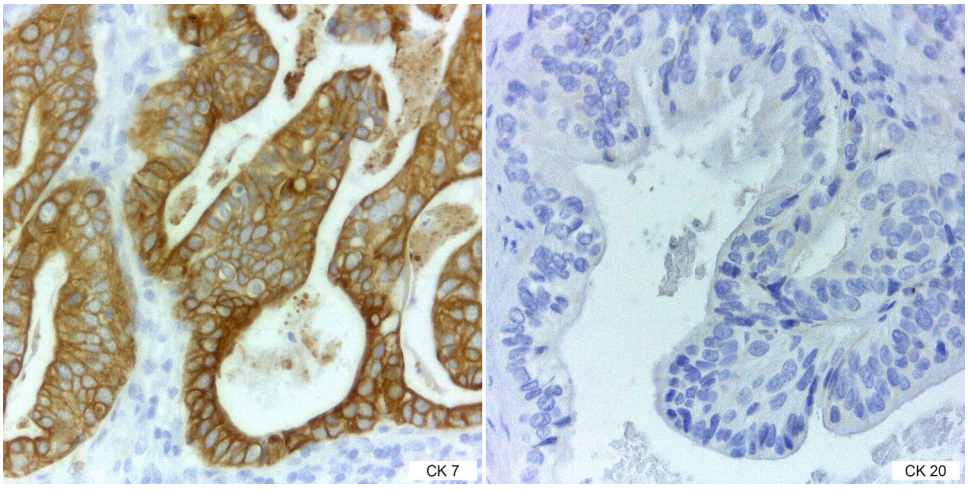

Fig. 5. CK 7 and CK 20, 400× – immunohistochemical studies for cytokeratins 7 and 20 showed expression of cytokeratin 7 and no expression of cytokeratin 20. This immunoprofile is coincident with the primary gastric tumor profile suggesting the gastric origin of this metastasis.

invasion. Despite this, the hematogeneous route is the most probable since there were no lymph nodes involved at the primary surgery and there was no peritoneal seeding.

Some reported cases of isolated splenic metastasis, seem to be part of aggressive loco-regional advanced disease with great probability of being a fully disseminated disease not recognized at that point. These cases are mostly seen on upper third gastric tumors, locally advanced tumors, with extensive nodal involvement, and invariably short survival.[6]

Most patients are asymptomatic. The symptoms and signs most frequently reported are asthenia, weight loss, abdominal pain, anemia and splenomegaly.[4] There are cases of splenic abscess formation or rupture as initial presentation.[2,11]

Most diagnosis are dependent on imaging. Ultrasound and CT scan are the usual performed exams during follow-up whenever indicated by symptoms or elevation of CEA and CA 19.9.[12] At some instances, there is doubt about the nature of lesions. PET-CT scan might be very useful since it has a high negative predictive value considering malignant lesions and it might show other probable metastatic spots not detected on CT scan.[7,8]

A true pre-operative diagnosis of splenic metastasis can only be made through biopsy. Although it is rarely described, it is considered both safe and reliable when evaluating splenic lesions.[13,14] Our patient was not submitted to biopsy since there was a good correlation between CT and PET-CT scan suspicion, lesion evolution and tumoral markers. The diagnosis of metastasis was highly probable. We recommend biopsy on less clear cases.

On reported cases of isolated splenic metastasis, as long as the patients are fit, they get treated by splenectomy with or without chemotherapy.[6,12,15]

Chemotherapy varies from neoadjuvant to adjuvant settings, multidrug or monodrug regimens. There are not consensual protocols. Our patient had multidrug chemotherapy with EOX which are first line drugs on National Comprehensive Cancer Network guidelines.

Our case is remarkable because our patient had a resected pulmonary metastasis prior to the splenic metastasis diagnosis. The high probability of having multi-organ disseminated disease was the rationale for the decision to perform palliative chemotherapy and then supportive treatment only. With time, the patient proved he was a great candidate for surgery, since no other metastasis grew. This “wait-and-see” approach has been defended as a way of selecting patients that truly benefit from aggressive surgical treatment.[6,15] Overall, the reported cases do not mention relevant complications from splenectomy in this setting.

The reported overall survivals point an advantage if the metastasis are diagnosed within a medium to long follow-up. Patients who had long free disease survivals are also the ones with longest overall survival.[6,10]

4. Conclusion

In cases of isolated splenic metastasis from gastric adenocarcinoma, fit patients should be considered for splenectomy, since there are reports of good patient survivals.[3,6,10]

Conflict of interest

None.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request

Author contributions

Marco Santos: design of article, research, manuscript, revision and approval. Vilma Martins: second surgeon, design, research, revision and approval. Filipa Moreno: pathological report, photographs, design, revision and approval. J. Ramón Vizcaíno: pathological report, analysis, revision and approval. Isabel Mesquita: first surgeon and patient assistant, conception and design of article, consultant, manuscript revisor, final revision and approval.

Authorship

The authors claim full responsibility for the production of this article and state that they have seen and approve the final manuscript being submitted. The authors declare their agreement regarding Publication Rules in International Journal of Surgery Case Reports.

Key learning points

- Splenic metastasis are rare.
- Surgery should be considered for selected patients as a way of improving survival.

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