CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 14 (2015) 44–47

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Primary gastric choriocarcinoma: A rare case

Vilma Florença Martins *, Filipa Moreno, J. Ramón Vizcaíno, Jorge Santos

Centro Hospitalar do Porto, Hospital de Santo António Largo Prof. Abel Salazar, 4099-001 Porto, Portugal

ARTICLE INFO

Article history:
Received 22 April 2015
Received in revised form 13 July 2015
Accepted 13 July 2015
Available online 18 July 2015

ABSTRACT

INTRODUCTION: Primary gastric choriocarcinoma accounts for 0.08% of all gastric cancers. It is a rapidly growing, widely metastatic and β-HCG-producing tumour of trophoblastic cells.
PRESENTATION OF CASE: A 69-year-old white man presented to the hospital with symptomatic anaemia. An upper gastrointestinal endoscopy showed an ulcer of the cardia and lesser curvature, whose biopsy specimens proved to be malignant (carcinoma cells, non-specified). The patient underwent total gastrectomy with D2 lymphadenectomy. A histologic evaluation revealed a choriocarcinoma admixed with adenocarcinoma cells without lymph node metastases. The patient died from haemorrhagic shock, due to rupture of liver metastases and a massive haemoperitoneum, within 2 months of the initial presentation.
DISCUSSION: Primary gastric choriocarcinoma characteristics resemble those of gastric primary adenocarcinoma. The dedifferentiation theory is the most widely accepted theory to explain the pathogenesis of PGC. It is essential to rule out other possible primary lesions such as testicular tumour. The optimal treatment is not yet well established due to very few reported cases.
CONCLUSION: Primary gastric choriocarcinoma is a rare tumour with an aggressive behaviour and very poor prognosis.

1. Introduction

Choriocarcinoma is a rapidly growing, widely metastatic and β-HCG (human chorionic gonadotropin)-producing tumour of trophoblastic cells. Most cases arise in the uterus following gestational events (e.g. normal or ectopic pregnancy or abortion). It can also be gonadal (ovary and testis) or extragonadal (e.g. lung, gastrointestinal tract, mediastinum or retroperitoneum) in origin [1–5].

First described by Davidsohn in 1905, primary gastric choriocarcinoma (PGC) is extremely rare, accounting for approximately 0.08% of all gastric cancers [6,7]. Most PGCs possess an adenocarcinoma component of variable magnitude and pure PGC is rare. Clinical presentation is similar to gastric adenocarcinoma, however it is more frequently a cause of gastrointestinal bleeding given its striking vascularity [8]. Definitive diagnosis by endoscopic biopsy is rare (8%) and most such cases are diagnosed after surgery [1,6].

The authors report a case of PGC admixed with an adenocarcinoma component in a male patient.

2. Presentation of case

A 69-year-old white man presented to the emergency department with chief complaints of chest pain, nausea, sweating and shortness of breath for a couple of hours' duration. His past medical history was significant for coronary artery disease. He had had a previous myocardial infarction and had been submitted to coronary stent placement. His medication included two antiplatelet drugs (aspirin and clopidogrel).

Physical examination was significant only for pale skin. The remainder was unremarkable. Laboratory values on admission showed severe anaemia (haemoglobin of 3.9 g/dL and haematocrit of 14.1%) and normal platelet count. The serum albumin levels, liver function tests, chemistry panels and cardiac markers were also normal. A 12-lead electrocardiogram revealed no acute findings.

An upper gastrointestinal endoscopy disclosed a 5 cm-diameter exophytic ulcer with necrotic areas and stigmata from recent bleeding on the cardia and proximal lesser curvature. A histopathologic examination of biopsy tissues (7 fragments) revealed carcinoma cells with highly pleomorphic nuclei and atypical mitotic figures. An immunohistochemical study showed strong positivity to pancytokeratin AE1/AE3 and CAM 5.2.

A computed tomography (CT) scan of the pelvis and abdomen visualized a gastric mass with deep central ulceration, arising from the gastric fundus and extending to the cardia and proximal lesser curvature. There were two suspicious microscopic lesions on the liver. No lymph node metastasis or testicular abnormalities were observed. A chest X-ray was normal. A gastrointestinal X-ray examination demonstrated an ulcerated lesion with a distinct elevation occupying the cardia, the anterior aspect of the proximal lesser curvature and the fundus. Tumour markers (CEA, CA 19.9, CA 125)

* Corresponding author.
E-mail address: vilmartins3@gmail.com (V.F. Martins).

http://dx.doi.org/10.1016/j.ijscr.2015.07.009

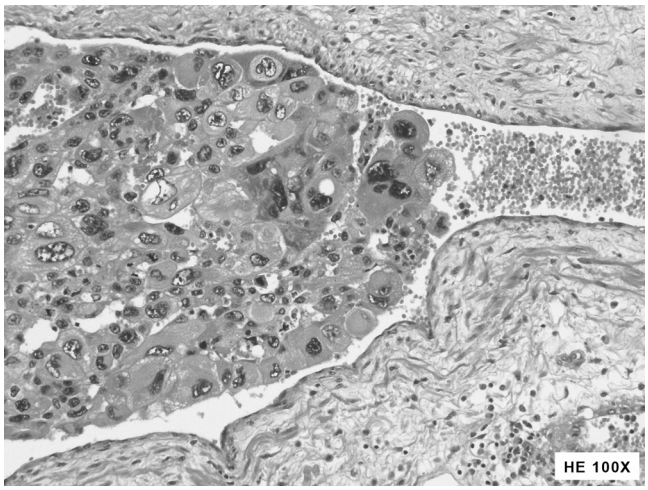

Fig. 1. H&E 100×—with gastric choriocarcinoma, there is a tendency for the choriocarcinomatous component to metastasize via blood vessels. Numerous images of vascular invasion were detected.

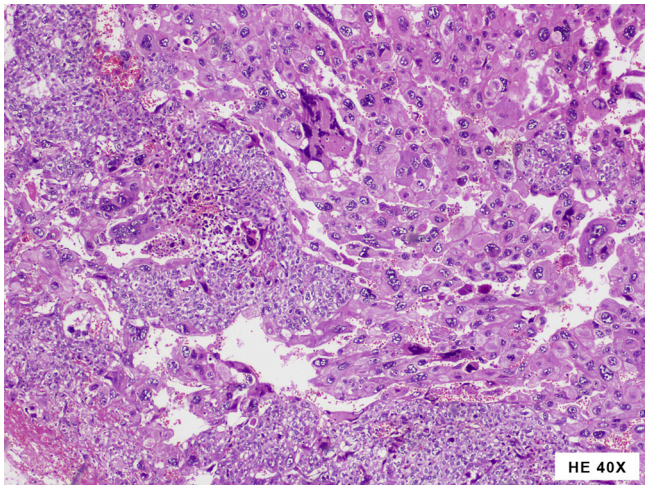

Fig. 2. H&E 40×—histology revealed a highly invasive malignant neoplasia with choriocarcinomatous differentiation, including cytotrophoblastic and syncytiotrophoblastic elements. Bizarre large nuclei were abundant. Large areas of tumour necrosis were also seen.

and β2 microglobulin protein were within normal limits. Serum β-HCG levels were extremely high (2140 mIU/ml—normal range <0.5 mIU/ml).

The patient was given multiple blood transfusions and ultimately underwent radical total gastrectomy with D2 lymphadenectomy and Roux-en-Y reconstruction. Exploration of the abdomen at the time of surgery revealed no evidence of macroscopic disease in the liver, peritoneum or retroperitoneum. The resected specimen contained a 7 cm exophytic tumour with central ulceration and areas of vascular congestion. Histologically, the neoplasm was strongly vascularized with extensive necrotic areas (Fig. 1) and had two distinct components. The main component (95%) consisted of highly pleomorphic cells with cytotrophoblastic and syncytiotrophoblastic differentiation, strongly suggestive of gastric choriocarcinoma (Fig. 2). The remaining 5% of the tumour was a moderately differentiated invasive adenocarcinoma (Fig. 3). Strong immunoreactivity for β-HCG was seen in the trophoblastic cells and the entire tumour was cytokeratin 7 positive (Fig. 4). The tumour had extended to subserosa (T2b) and no metastases were found in the 14 perigastric lymph nodes resected (N0). Both resected margins were free of tumour. Extensive vascular and perineural invasion was present.

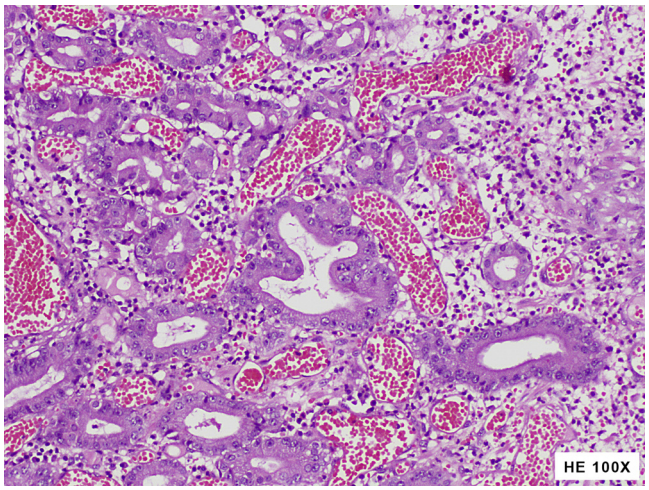

Fig. 3. H&E 100×—a small superficial area of moderately differentiated adenocarcinoma was also identified, comprising approximately 5% of the tumour.

Based on pathological findings and in the absence of a testicular mass, the patient was diagnosed with PGC with an adenocarcinoma component. The post-operative course was uneventful and he was discharged 9 days after surgery.

He returned to the emergency department with complaints of sudden right upper quadrant abdominal pain, vomiting and severe anaemia (3.7 g/dL), 12 days after discharge. A repeated CT scan of the abdomen revealed multiple liver metastases in the right and left lobes. Some lesions had ruptured causing a massive haemoperitoneum, confirmed by paracentesis (Fig. 5). Despite efforts to resuscitate the patient, this was a terminal event. The patient died from haemorrhagic shock, 40 days after initial presentation.

3. Discussion

Primary gastric choriocarcinoma is a rare and highly aggressive tumour characterized by the presence of a double cell population and early metastases, especially in the liver, lung and regional lymph nodes [7,9]. Several theories have been proposed to explain the pathogenesis of PGC. The most widely accepted is the dedifferentiation theory. First proposed by Pick in 1926 [10], this theory showed a dedifferentiation of the malignant gastric adenocarcinoma cells to the level of the embryonal ectoderm, retaining the ability to form trophoblasts [11,12]. Pure choriocarcinoma would arise through overgrowth and elimination of the original adenocarcinoma [9]. Supporting this theory is the finding that PGC characteristics resemble those of gastric primary adenocarcinoma: mean age of onset, male-female ratio, tumour location and similar geographic distribution [9,13]. Additionally, 71% of PGCs are associated with poorly differentiated adenocarcinoma and less than 25% are pure choriocarcinoma [8,14]. According to Noguchi et al., 70% of PGCs have an adenocarcinoma component and most patients have early metastases [6]. Liu et al. reported that PGC genetically possesses characteristics of both adenocarcinoma and gestational choriocarcinoma [15]. This tumour has haematogenous dissemination as opposed to lymphatic spread of gastric adenocarcinoma [12].

Despite the generalized acceptance of the dedifferentiation theory, one question remains: what is the role of HCG-producing cells, normally present in the gastric mucosa? Yakeishi et al. demonstrated the existence of HCG-producing cells in choriocarcinomas as well as in adenocarcinomas and in the normal gastric mucosa, in different proportions. Normal gastric cells with the ability to

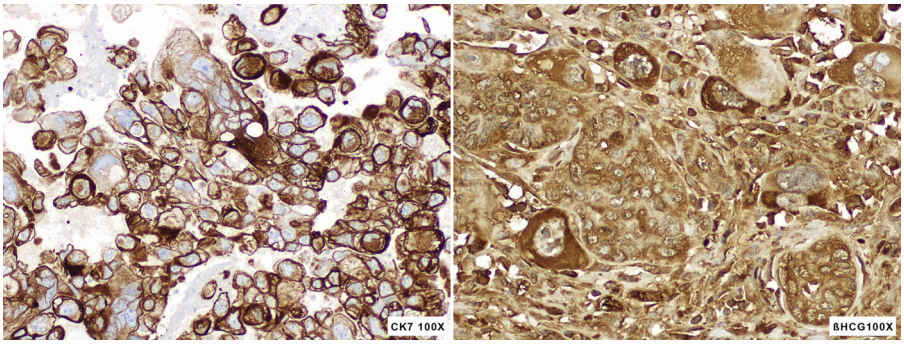

Fig. 4. Immunohistochemistry 100×—the immunohistochemical study with antibodies for citokeratin 7 and β-HCG showed positive staining, confirming the choriocarcinomatous nature of the tumour.

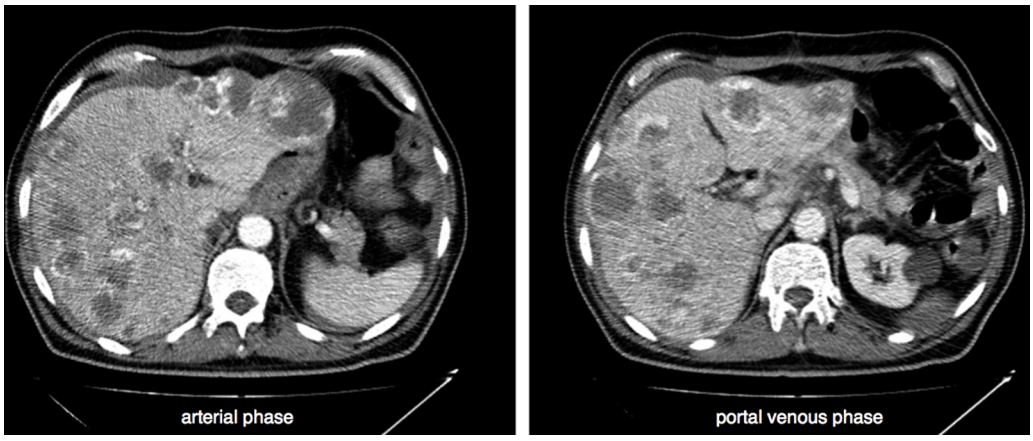

Fig. 5. Contrast-enhanced CT scan of abdomen taken in arterial and portal venous phases showed hipervascular liver metastases with signs of active bleeding from subcapsular lesions, causing hemoperitoneum.

produce HCG directly may develop into a de novo PGG, without a preceding adenocarcinoma (e.g. some pure forms of PGC) [9].

Histologically, there is a combination of malignant cytotrophoblasts and syncytiotrophoblasts, in most cases admixed with adenocarcinoma cells [8]. Trophoblastic cells stain positive for β-HCG in immunohistochemistry and most cases are accompanied by elevated serum β-HCG. Serum β-HCG has no prognostic significance but may be useful for evaluating response to treatment and tumour recurrence [8,12].

Differential diagnosis of PGC is a metastatic trophoblastic tumour from other sites, which are more frequent than PGC [12]. It is crucial to rule out other possible primary lesions and to confirm that β-HCG becomes normal after tumour resection. The treatment of choice has not been established. Current treatment includes gastrectomy with lymphadenectomy, since most PGCs are known to have an adenocarcinoma component, combined with chemotherapy [14]. There is no established regimen of chemotherapy for PGC [1].

The prognosis is considerably worse than that of gastric adenocarcinoma. Most patients have early metastases in the lung, liver and regional lymph nodes [8,9]. The mean survival time is less than 2 months [14]. Most patients die of hepatic failure due to liver metastases and bleeding from the primary/metastatic tumour [6].

4. Conclusion

Primary gastric choriocarcinoma is a rare tumour with an aggressive behaviour [1,4]. The optimal treatment has not yet been established due to very few reported cases and patients have a very poor prognosis [11].

Conflicts of interest

None.

Funding

None.

Ethical approval

Approved by the ethics committee of the Hospital Santo António, Centro Hospitalar do Porto. Document available on request.

Consent

Written informed consent was obtained from the patient next of kin 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

Vilma Florença Martins—Design of article, research, manuscript, revision and approval.

Filipa Moreno—Pathological report, photographs, design, revision and approval.

J. Ramón Vizcaíno—Pathological report, analysis, revision and approval.

Jorge Santos—First surgeon and patient assistant, conception and design of article, consultant, manuscript, final revision and approval.

Guarantor

Vilma Florença Martins (1st author).
Jorge Santos (4th author).

References

[1] T. Noguchi, S. Takeno, T. Sato, Y. Takahashi, Y. Uchida, S. Yokoyama, A patient with primary gastric choriocarcinoma who received a correct preoperative diagnosis and achieved prolonged survival, Gastric Cancer 5 (2) (2002) 112–117.
[2] J. Wurzel, J.J. Brooks, Primary gastric choriocarcinoma: immunohistochemistry, postmortem documentation and hormonal effects in a postmenopausal female, Cancer 48 (1981) 2756–2761.
[3] Y. Hirano, T. Hara, H. Nozawa, K. Oyama, N. Ohta, K. Omura, et al., Combined choriocarcinoma, neuroendocrine cell carcinoma and tubular adenocarcinoma in the stomach, World J. Gastroenterol. 14 (20) (2008) 3269–3272.
[4] L. Jiang, J.T. Wu, X. Peng, Primary choriocarcinoma of the colon: a case report and review of the literature, World J. Surg. Oncol. 11 (2013) 23 http://dx.doi.org/10.1186/1477-7819-11-23
[5] J.M. Infante, I.B. Pedreño, C.R. Noiseux, I.M. Jiménez, C.G. Asanza, P.M. Fernández-Pacheco, Gastrointestinal hemorrhage due to metastatic choriocarcinoma with gastric and colonic involvement, Rev. Esp. Enferm. Dig. 96 (1) (2004) 77–80 http://dx.doi.org/10.4321/S1130-01082004000100010
[6] A. Kobayashi, T. Hasebe, Y. Endo, S. Sasaki, M. Konishi, M. Sugito, et al., Primary gastric choriocarcinoma: two case reports and a pooled analysis of 53 cases, Gastric Cancer 8 (3) (2005) 178–185.
[7] B.W. Eom, S.Y. Jung, H. Yoon, M.C. Kook, K.W. Ryu, J.H. Lee, et al., Gastric choriocarcinoma admixed with an α-fetoprotein-producing adenocarcinoma and separated adenocarcinoma, World J Gastroenterol 15 (40) (2009) 5106–5108.
[8] D.W. Dye, R. Broadwater, L.W. Lamps, Gastric Choriocarcinoma, J. Clin. Oncol. 23 (25) (2005) 6251–6253 http://dx.doi.org/10.1200/JCO.2005.09.011
[9] Z. Liu, J.L. Mira, J.C. Cruz-Caudillo, Primary gastric choriocarcinoma a case report and review of the literature, Arch. Pathol. Lab Med. 125 (12) (2001) 1601–1604.
[10] L. Pick, Uber die chorioepthelahnlich metastasierende from des magencarcinomas, Klin. Wochenscher. 5 (1926) 1728.
[11] Y. Imai, T. Kawabe, M. Takahashi, M. Matsumura, Y. Komatsu, E. Hamada, et al., A case of primary gastric choriocarcinoma and review of the Japanese literature, J. Gastroenterol. 29 (5) (1994) 642–646.
[12] A. Shastri, N.G. Daver, T.G. Hayes, Primary gastric chorioadenocarcinoma: a needle in a haystack, Rare Tumors 3 (2) (2011) e19 http://dx.doi.org/10.4081/rt.2011.e19
[13] T. Krulewski, L.B. Cohen, Choriocarcinoma of the stomach: pathogenesis and clinical characteristics, Am. J. Gastroenterol. 83 (10) (1988) 1172–1175.
[14] J.H. Yoon, M.S. Kim, E.H. Kook, S.H. Ahn, S.Y. Jeong, M.S. Han, et al., Primary gastric choriocarcinoma: two case reports and review of the literatures, Cancer Res. Treat. 40 (3) (2008) 145–150 http://dx.doi.org/10.4143/crt.2008.40.3.145
[15] A.Y. Liu, W.Y. Chang, E.K. Ng, X. Zhang, B.C. Li, J.H. Chow, et al., Gastric choriocarcinoma shows characteristics of adenocarcinoma and gestational choriocarcinoma: a comparative genomic hybridization and fluorescence in situ hybridization study, Diagn. Mol. Pathol. 10 (3) (2001) 161–165 http://dx.doi.org/10.1097/00019606-200109000-00003