Very aggressive gastric adenocarcinoma with rare osteoclast — like giant cells: a case report and review of the literature

Barbara Rygoł¹, Kamil Wdowiak¹, Jacek Pająk², Jerzy Wojnar¹, Jerzy Chudek¹

Extraskeletal carcinomas with osteoclast-like giant cells (OGC) constitute a rare type of malignant tumors, usually located in the pancreas, gall bladder, breast and kidney. Histologically they are characterized by the presence of multinucleated giant cells that resemble osteoclasts mixed with poorly differentiated adenocarcinoma cells. This paper reports a case of primary gastric adenocarcinoma with osteoclast-like giant cells in a 75-year-old woman who suffered from epigastric pain, nausea, vomiting and weight loss. Histological examination of the tissue obtained during initial surgery (subtotal palliative Billroth II resection) revealed poorly differentiated adenocarcinoma with an infiltrate of osteoclast-like giant cells and no EBV immunostaining (non-lymphoepithelioma-like carcinoma, stage pT4aN3a). The tumor progressed rapidly with extensive perigastric involvement, infiltration of the paraaortic lymph nodes and the head of the pancreas. Poor general condition (WHO 3) prevented postoperative chemotherapy. The patient died 5 months after surgery due to rapid relapse. There is still a lack of knowledge to determine the prognosis for patients with OGC carcinomas. In this study, we report a case of gastric adenocarcinoma with OGC and review the previously published literature clinical and pathologic data on this rare neoplasm.

Biuletyn PTO NOWOTWORY 2018; 3, 2: 103–106

Key words: osteoclast-like giant cells, CD 68, adenocarcinoma, stomach

Introduction

Adenocarcinomas with osteoclast-like giant cells, that are typical for osseous neoplasms, are extremely rare tumors with usually slow growth, a relapse rate of 50% after surgery, and low metastatic potential. Undifferentiated carcinomas with OGC were first described by Rosai in 1968 and classified by WHO in 2000 [1]. According to the literature, these tumors are often discovered in the breast [2], pancreas [3], endometrium [4], gallbladder [5] osteoclast-like giant cells (OGCs, thyroid [6] and lungs [7]. Until the present, only few cases of gastric adenocarcinomas with OGC, usually poorly differentiated have been reported, mostly in men (Tab. I). They were located mainly in the gastric cardia or corpus.

Case description

A 75-year old female was admitted to the Surgical Department in January 2013 reporting upper abdominal pain, nausea and vomiting. There was no history of hematochezia or melena, but she had lost 6 kg in weight in 2 months. Physical examination revealed mild tenderness in the epigastric region of the abdomen. Laboratory tests showed anemia (Hb 7.8 mmol/l) with iron deficiency (Fe 8.1 µmol/l). An abdominal CT scan demonstrated a large mass 15 × 10 cm infiltrating the lesser curvature of the stomach, antrum and duodenum without lymph node involvement. Esophagogastrscopy revealed an ulcerative lesion of 5 cm diameter in the antrum as well as blood clots.

¹Department of Internal Medicine and Oncology, School of Medicine in Katowice, Silesian Medical University, Katowice, Poland
²Department of Pathology, School of Medicine in Katowice, Silesian Medical University, Katowice, Poland

Artykuł w wersji pierwotnej:
Rygoł B, Wdowiak K, Pająk J, Wojnar J, Chudek J. Very aggressive gastric adenocarcinoma with rare osteoclast — like giant cells: a case report and review of the literature. NOWOTWORY J Oncol 2018; 68: 97–100.
Należy cytować wersję pierwotną.
on the surface of the lesser curvature. A subtotal palliative Billroth II resection was performed without preoperative chemotherapy. Pathology found an exophytic tumor with necrosis located in the antrum 5 cm in diameter. Gastric folds were smoothed as the tumor invaded through the seromuscular layer and infiltrated the perigastric adipose tissue as well as the duodenum. Metastatic infiltrates were found in 11 of 13 identified local lymph nodes (diameter up to 1.5 cm) — stage pT4aN3a.

Histological assessment showed a poorly differentiated adenocarcinoma with an infiltrate of osteoclast-like giant cells (Fig. 1). Neoplastic cells were positive for CK7, AE1/AE3+, EMA+/- and negative for vimentin, synaptophysin, CD 31, CD 20, CD 99, HCG, EBV (LMP-1) and Her-2, while OGCs were positive for CD68+ and lysozyme. Immunohistochemical staining was performed using antibodies from Dako and Roche (for Her-2). The OGC were present both in the primary gastric adenocarcinoma and lymph node metastases. CD 3, CD 4 T-lymphoid cells infiltrates were observed in tumor stroma.

A postoperative CT scan (April 2013) revealed a cancer infiltration of the pancreas head and enlargement of the paraaortic lymph nodes. Poor general condition (WHO 3), jaundice (serum bilirubin level 80–122 µmol/l) with elevated activities of GGTP (460–680 IU/l) and ALP (359–560 IU/l) precluded chemotherapy. There was rapid local progression with extensive perigastric involvement. The patient died 5 months after surgery.

Discussion
Gastric carcinomas with OGC are a heterogeneous group of tumors. Ushiku et al. described three distinct types of gastric carcinomas with OGC: lymphoepithelioma — like carcinoma (LELC), non-LELC, and giant cell tumor (GCT) [8]. According to the authors, the LELC type is associated with Epstein-Barr Virus (EBV) infection, that could be confirmed by RNA in situ hybridization (ISH) and granulomatous reaction with OGC, forming small clusters of epithelioid histiocytes or sarcoidal granuloma. In contrast, non-LELC cases are not associated with EBV infection or possibly loose viral DNA in the cancer progression [8]. In addition to OGC, infiltrations with neutrophils, macrophages and lymphoplasmacytic cells were reported. The GCT type is characterized by numerous OGC with metaplastic

Figure 1. Poorly differentiated adenocarcinoma of the stomach: A: with multinucleated giant cells. H-E stain × 200; B: positive for cytokeratin CK7. IHC stain × 200; C: positive CD 68 staining on the OGC and stromal macrophages, IHC × 200; D: positive lysozyme staining in multinucleated giant cells. IHC × 100
Conflict of interest: none declared

Kamil Wdowiak, MD
Silesian Medical University
Department of Internal Medicine and Oncology
ul. Reymonta 8, 40–027 Katowice, Poland
e-mail: wdwowiak.kamil@op.pl

Received: 12 Mar 2018
Accepted: 8 Jun 2018

References
1. Rosai J. Carcinoma of pancreas simulating giant cell tumor of bone. Electron-microscopic evidence of its acinar cell origin. Cancer 1968; 22: 333–344.
2. Krishnan C, Longacre TA. Ductal carcinoma in situ of the breast with osteoclast-like giant cells. Hum Pathol 2006; 37: 369–372.
3. Temesgen WM, Wachtel M, Dissankai S. Osteoclastic giant cell tumor of the pancreas. Int J Surg Case Rep 2014; 5: 175–179.
4. Imura J, Tomita S, Ono Y et al. Endometrial adenocarcinoma with osteoclast-like giant cells: Immunohistochemistry and histogenesis. APMIS 2005; 113: 140–144.
5. Akatsu T, Kameyama K, Kawachi S et al. Gallbladder carcinoma with osteoclast-like giant cells. J Gastroenterol 2006; 41: 83–87.
6. Mehd G, Ansari HA, Siddiqui SA. Cytology of anaplastic giant cell carcinoma of the thyroid with osteoclast-like giant cells — a case report. Diagn Cytopathol 2007; 35: 111–112.
7. Dahm HH. Non-small cell carcinoma of the lung with osteoclast-like giant cells. J Gastroenterol 2006; 41: 83–87.
8. Ushikai T, Shinozaki A, Uozaki H et al. Gastric carcinoma with osteoclast-like giant cells. APMIS 2005; 113: 140–144.
9. Pandit R, Danilova IA. A case of atypical gastric carcinoma with osteoclast-like giant cells. Histopathology 2010; 56: S31–S35.
10. Baschinsky DY, Frankel WL, Niemann TH. Gastric carcinoma with osteoclast-like giant cells. J Gastroenterol Hepatol 2009; 24: 1678–1681.
11. Poulios C, Koletsas T, Goulas A et al. Gastric carcinoma with osteoclast-like giant cells coexisting with gastrointestinal spindle cell tumor. Case Rep Pathol 2013; 2013: 24758. doi: 10.1155/2013/247585.
13. Stracca-Pansa V, Menegon A, Donisi PM et al. Gastric carcinoma with osteoclast-like giant cells: Report of four cases. *Am J Clin Pathol* 1995; 103: 453–459.

14. Zheng L, Yang X, Pan H et al. Gastric carcinoma with osteoclast-like giant cells: a case report and review of the literature. *J Zhejiang Univ Sci B* 2009; 10: 237–241.

15. Wincewicz A, Kowalik A, Zięba S et al. αFetoprotein-producing hepatoid gastric adenocarcinoma with osteoclast-like giant cells and neuroendocrine differentiation: A case study with molecular profiling. *Int J Surg Pathol* 2015; 23: 537–541.

**Appendix**

![Figure 2. Poorly differentiated adenocarcinoma of the stomach (H&E 200 um)](image-url)