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Letters to the Editor

Gastric carcinoid tumors: An analysis of 24 cases

Key words: Gastric carcinoids tumors. Carcinoid syndrome. Endoscopic mucosal resection. Mucosectomy. Banding.

Dear Editor,

The incidence of carcinoid tumors (CTs) has increased over time (1). Gender distribution is highly balanced –slightly higher in women for malignant carcinoids– and people of all ages are affected even if these tumors predominate during the sixth decade of life. Gastric carcinoids represent 3 per thousand of all gastric neoplasms. Reviews and series have been reported regarding gastric carcinoid tumors (GCT), as well as carcinoids arising in the duodenum, intestine, appendix, rectum, etc.

The goal of this retrospective study was to review a personal series of GCTs obtained after searching endoscopy and echoendoscopy (EUS) archives. All demographic parameters (race, age, gender, etc.) were collected, as well as all variables associated with tumor endoscopic and echoendoscopic characteristics (size, morphology, echogenicity, etc.), lesion site, clinical manifestations, management, treatment-related efficacy and complications, and survival at the time of review. The statistical analysis was carried out with the software package SPSS 11.5 for Windows.

Case reports

Twenty-four patients with GCT were identified over a period of 19 years (1994-2012), several with multifocal disease and one multicentric case, namely a patient with multiple endocrine neoplasia type 1 (MEN-1) who had gastrinomas, gastric carcinoids and a retroperitoneal carcinoid. Mean age at presentation was 50 years (range, 7 to 74 years). Fourteen patients (58 %) were male and 10 (42 %) were female, all of them Caucasians. These data are similar to those reported in the literature.

Endoscopy, endoscopic ultrasonography (EUS) and computerized tomography were the primary diagnostic approaches; an OctreoScan was performed on some occasions. All patients underwent videoendoscopy and had biopsy samples obtained for histopathology; 17/24 (71 %) underwent echoendoscopy (radial/linear EUS and miniprobes) (Fig. 1).

Fifty percent were type 1 GCTs, 12.5 % were type 2, 29 % were type 3, and 8.3 % were type 4. Eleven tumors (46 %) were multifocal within the stomach. Only one multicentric case was found, a patient with MEN-1 who also exhibited liver metastases and was treated with somatostatin analogues. Mean lesion size was 8.3 mm (range, 2 to 20 mm).

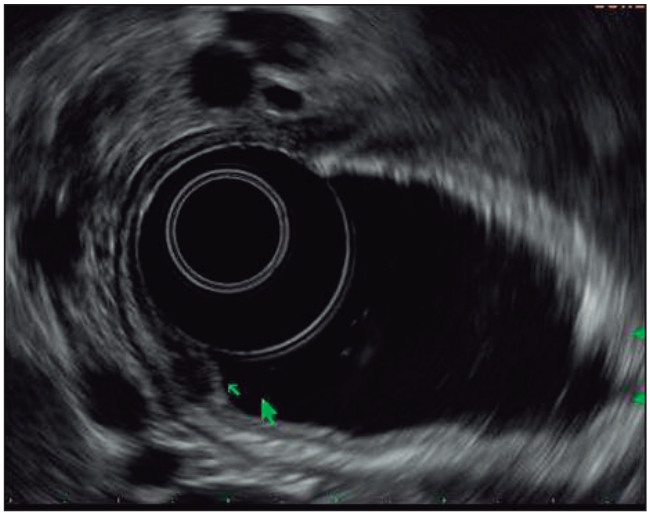

Fig. 1. EUS: Hypoechoic gastric submucosal tumor dependent on superficial layers and suggestive of a carcinoid as assessed by radial EUS.

Endoscopic therapy was performed in 19 of 24 patients, and 11 patients with 15 GCTs underwent EUS-assisted endoscopic resection once metastatic disease was ruled out using computerized tomography and OctreoScan.

Management included loop resection after submucosal injection (16 cases), band-assisted endoscopic mucosal resection (EMR) or mucosectomy (4 cases) (Fig. 2), and surgical resection (3 cases).

Eleven patients with a total of 15 GCTs underwent EUS-assisted endoscopic resection. Complete resections amounted to 93 % *versus* 75 % when EUS was not used, with a bleeding rate of 0 %; only one mini-perforation (7 %) occurred, which was solved by using clips. Follow-up lasted up to 24 months with a recurrence rate of 33 %. Present-day survival is 92 % (22 patients).

Discussion

GCTs do not reach 1 % of gastric neoplasms and represent 2-4 % of all carcinoids, but their frequency is now increasing to nearly 12 % (2). Total CT incidence is 5 cases/100,000/year (1), and the dominance of tumors in the digestive system, specifically in the bowel, remains (3), albeit the prevalence and incidence of rectal and gastric carcinoids (4) keeps rising.

This increase in GCTs may potentially result from the screening for atrophic gastritis using gastroscopy and biopsy collection, as well as an increased use of immunocytochemistry (chromogranin and synaptophysin positivity is pathognomonic for carcinoid) (4). The relative prevalence of gastric carcinoid is 0.58 % according to a recent American endoscopy study (5) where half of the cases had chronic gastritis and/or intestinal metaplasia.

In other series (1,2) over 70 % of cases are associated with type A chronic atrophic gastritis or pernicious anemia (GCT type 1). They are usually smaller than 1 cm and 50 % are multifocal. Fewer than 10 % exhibit metastasis. Hypergastrinemia plays a highly significant role, hence they may be chronically treated with somatostatin. Between 5 % and 10 % of cases (GCT type 2) are associated with Zollinger-Ellison syndrome in the setting of genetically inherited MEN-1. Between 15 % and 25 % are sporadic (GCT type 3), single tumors greater than 1-2 cm in size, with metastasis in over 50 % of cases (Ki > 2 %). They have been associated with histamine-related atypical carcinoid syndrome. When greater than 2 cm their prognosis is usually fatal.

In our series of 24 cases, 50 % were type 1, multicentric tumors with very low malignancy rates. Treatment and prognosis are similar to those of type A chronic atrophic gastritis. No GCT in our series exceeded 20 mm, and most were managed endoscopically.

Poorly-differentiated gastric neuroendocrine tumors are classified as type 4 GCTs. These are rare (6-8 %), solitary malignancies, 50-70 mm in size (80-100 % with metastasis), that arise in patients older than 60 years of age. Only two cases were seen in our statistical analysis (8 %).

From all the above, CT prognosis is dependent on size, metastasis status, and/or carcinoid syndrome development (fewer than 10 %).

Gastric carcinoids were most common in our series, likely as a result of a search bias, and were managed with endoscopic treatment (primarily mucosectomy or multi-band EMR). EUS contributed a higher rate of complete resections with a complication index similar to that reported in the literature. Somatostatin analogues also represent an advance in the treatment of CTs, most particularly type 1 and type 2 gastric carcinoids (4,6,7).

To conclude, the overall incidence of carcinoid is possibly increasing. The proportion of gastroduodenal carcinoids is also increasing when compared to historic series, probably because of the widespread use of endoscopy. In our experience, most GCTs may be endoscopically treated with loop resection after submucosal injection or band-assisted mucosectomy with very good results and a low complication rate.

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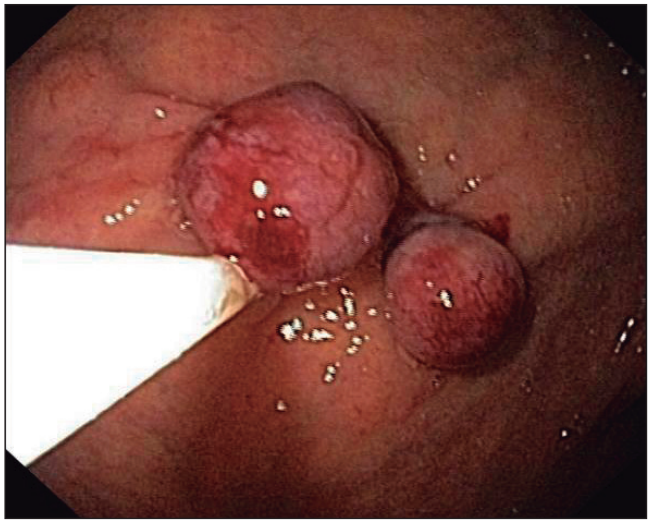

Fig. 2. Multi-band mucosectomy (Duette-EMR) for two type 1 gastric CTs.

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