Diagnosis and preoperative tagging of duodenal gastrinoma by endoscopic ultrasound

Almost 50% of sporadic duodenal gastrin-expressing neuroendocrine tumors (NETs), so-called gastrinomas, are associated with Zollinger–Ellison syndrome (ZES). The risk for lymph node metastasis is high (40%–70%), even in tumors smaller than 10 mm [1]. We report the endoscopic ultrasound (EUS) diagnosis of a case of sporadic duodenal gastrinoma manifesting with ZES.

A 57-year-old man presented with chronic diarrhea that had lasted for 6 years. Upper gastrointestinal endoscopy showed multiple ulcerations of the second part of the duodenum. The patient’s high levels of gastrin and chromogranin A (two and four times the normal values, respectively) and proton pump inhibitor-sensitive diarrhea were suggestive of ZES.

The results of computed tomographic enterography and somatostatin receptor scintigraphy were normal. EUS showed a hypoechoic, well-defined, 10-mm submucosal lesion of the duodenal bulb (Fig. 1), without invasion of the muscularis propria, and two suspicious periduodenal lymph nodes. The lesion was then visualized with a side-viewing scope (Video 1), and biopsy confirmed a well-differentiated NET. Surgical resection after endoscopic tagging of the lesion was proposed.

Because of the immediately post-pyloric location of the lesion, tagging with clips was precluded. Under EUS guidance, a curvilinear echoendoscope (GF-UCT140;
Olympus, Tokyo, Japan) and a 22-gauge needle (Wilson-Cook Medical, Winston-Salem, North Carolina, USA) (● Fig. 2, ● Video 2) were used to inject 0.4 mL of contrast agent (Lipiodol; Guerbet, Bloomington, Indiana, USA) into the tumor. The tag was seen at computed tomography 5 hours later (● Fig. 3).

Duodenectomy with antrectomy and lymph node dissection were performed. Pathological examination confirmed a 10-mm, gastrin-expressing G1 NET (● Fig. 4) and two metastatic lymph nodes (pT1N1R0). Despite normalization of the gastrin level after the surgery, esomeprazole at a dosage of 80 mg/d was maintained.

In conclusion, our case illustrates the high risk for lymph node invasion associated with even small sporadic duodenal gastrinomas, and the key role of EUS in the diagnosis, staging, and tagging of such lesions.

Reference
1 Scherübl H, Jensen R, Cadiot G et al. Neuroendocrine tumors of the small bowels are on the rise: early aspects and management. World J Gastrointest Endosc 2010; 2: 325–334

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DOI http://dx.doi.org/10.1055/s-0034-1393235
Endoscopy 2015; 47: E504–E505
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

Corresponding author
Rodica Gincul, MD
Gastroenterology
Edouard Herriot Hospital
5 Place d’Arsonval
69437 Lyon
Cedex 03
France
Fax: +33-472110147
rodicta.gincul@chu-lyon.fr

Rodica Gincul1, Vincent Lepilliez1, Thomas Walter1,2, Maud Rabeyrin3, Thierry Ponchon1, Mustapha Adham4, Jean-Alain Chayvialle1,2
1 Department of Gastroenterology, Edouard Herriot Hospital, Hospices Civils de Lyon, Lyon, France
2 Université Claude Bernard Lyon 1, Lyon, France
3 Department of Pathology, Edouard Herriot Hospital, Hospices Civils de Lyon, Lyon, France
4 Department of Digestive Surgery, Edouard Herriot Hospital, Hospices Civils de Lyon, Lyon, France

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Stuttgart · New York
ISSN 0013-726X

Endoscopy_UCTN_Code_TTT_1AS_2AB

Competing interests: None

Endoscopy 2015; 47: E504–E505

Gincul Rodica et al. EUS diagnosis and preoperative tagging of duodenal gastrinoma... Endoscopy 2015; 47: E504–E505

○ Fig. 4 Pathological examination of the surgical specimen. a Typical appearance of a well-differentiated neuroendocrine tumor, without invasion of the muscularis propria (hematoxylin-eosin-saffron, original magnification × 10). b Immunohistochemistry reveals a gastrin-expressing tumor (indirect immunoperoxidase, original magnification × 100).