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Sequential therapies in gastric gastrinoma

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Gastrinomas represent functional neuroendocrine neoplasms (NEN), which can cause severe oesophagitis, and gastric and duodenal ulcers refractory to proton pump inhibitors (PPIs). Herein is presented the case of a rare gastric gastrinoma (GC) in a 45-year-old female who presented with Zollinger–Ellison syndrome.

In September 2017, a patient with a history of abdominal and back pain and significant weight loss (BMI 16), was admitted to the emergency gastroenterology department due to gastrointestinal bleeding symptoms. She was diagnosed with multiple penetrating ulcers in the oesophagus, stomach, and duodenum. Prolonged (7-week) intravenous treatment with high doses of PPIs was undertaken. An abdominal ultrasound followed by a contrast-enhanced computed tomography (CT) scan showed multiple liver lesions.

In January 2018, the patient was admitted to an emergency surgical department due to gastric and duodenal ulcer perforation, which was complicated with a diffuse purulent peritonitis. The Reichel-Polya procedure of a stomach resection with an enucleation of a right liver lobe lesion was performed. The gastric mass and the liver lesions stained positive for chromogranin A, synaptophysin, gastrin, and Ki-67 of 1%. Well-differentiated, multifocal gastric NEN with liver metastases was confirmed.

Biochemical work-up revealed elevated serum gastrin levels [1231 pg/mL (13–115)] (Tab. 1). Clinically, biochemically, and genetically multiple endocrine neoplasia type 1 (MEN 1) syndrome was excluded.

Thereafter, [^{68}Ga]Ga-DOTA-TATE PET/CT visualized overexpression of somatostatin receptors (SSTR) in the liver lesions (Fig. 1).

In April 2018, the patient commenced treatment with somatostatin analog (SSA) (Lanreotide Autogel), and three months later she was qualified for tandem peptide receptor radionuclide therapy (PRRT) ([^{90}Y]Y/[^{177}Lu]Lu-DOTA-TATE between 07.2018 and 03.2019). Since then, the patient continued Lanreotide Autogel therapy with good tolerance and no clinically relevant toxicity. SSA and PRRT contributed to clinical, radiological, and biochemical disease stabilisation, which was confirmed by follow-up ([^{68}Ga]Ga-DOTA-TATE PET/CT and CT) imaging (Fig. 2). During the COVID-19 pandemic, the patient has continued SSA treatment using an automatic syringe of Lanreotide Autogel for self-injections every 4 weeks and has visited our endocrinology outpatient clinic every 3 months for follow-up.

Gastric NEN accounts for 6.9–8.7% of all gastro-entero-pancreatic neoplasms (GEP-NEN) [1]. The incidence has been described at 5–20/100,000 persons/year [2]. Gastrinoma is a NEN, characterized by gastrin

Table 1. ***Biochemical blood test results during the patient's treatment — the patient had high gastrin and chromogranin A level***

Blood investigation	Result before treatment 01.02.2018	Result after treatment 23.08.2021	Normal range
Chromogranin A [μg/L]	475	403	0–100
Gastrin [pg/mL]	1231	437	13–115
Serotonin [ng/mL]	422	270	80–450
5-HIAA [mg/24 h]	2.72	2.13	2–9

5-HIAA — 5-hydroxyindoleacetic acid

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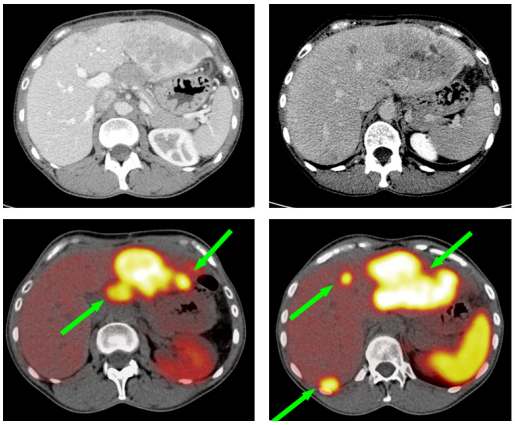

Figure 1. *Abdomen CT scan and [^{68}Ga]Ga-DOTA-TATE PET/CT — April 2018: SSTR overexpression (green arrows) in liver metastases (II–IV, V, VI, and VII segments)*

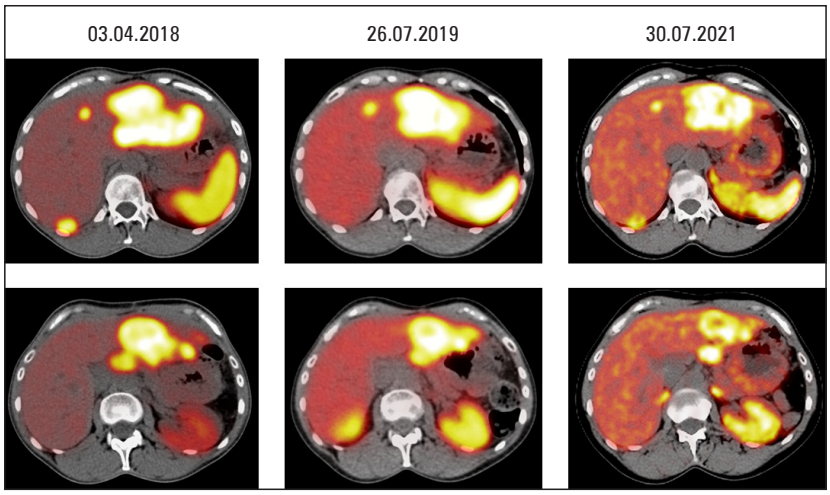

Figure 2. *Hepatic multiple foci of intense increased tracer uptake on axial [^{68}Ga]Ga-DOTATATE PET/CTs — disease stabilisation*

overexpression and hypersecretion causing peptic refractory ulcers [3]. About 80% are sporadic, while 20–30% are associated with MEN 1 [4]. Based upon my literature review, only 13 reports of sporadic GG were published [1].

At diagnosis, in the presented subject of an advanced GG with multiple liver metastases, radical resection of the neoplastic mass was not feasible. SSTR overexpression in the liver metastases, low proliferation index, and gastrin hypersecretion made the patient a good candidate for treatment with SSA and PRRT [5]. In conclusion, the sequential treatment comprising a gastrectomy, SSA, and PRRT gave in an aggressive GG a prolonged effect of clinical, biochemical, and radiological disease stabilization for almost 3.5 years so far.

Conflict of interest

None declared.

Funding

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