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Duodenal carcinoid tumour – a case report

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ABSTRACT

Duodenal carcinoids are rare tumours of the small intestine with heterogenous clinical and pathological characteristics. The long-term prognosis is very good if discovered in the early stages. We present the case of a patient with a non-functional duodenal carcinoid tumour discovered incidentally during an upper gastrointestinal endoscopy. The diagnosis was confirmed through immunohistochemistry. Treatment consisted of the endoscopic resection of the tumour and the surveillance of the patient for the following 2 years, with no signs of recurrence. We have conducted a literature review regarding the clinical manifestations, diagnosis, treatment, and follow-up of patients with this type of tumours.

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Introduction

Carcinoid tumours arise from enterochromaffin cells of the aerodigestive tract. They are also known as low or intermediate grade well-differentiated neuroendocrine tumours (NETs). The incidence rates of carcinoid tumours has risen over time from 1.09:100000 (1973) to 6.98:100000 (2012). This increase is partly explained by increased accessibility to endoscopic procedures and imaging techniques, particularly computed tomography (CT), which allow early detection in asymptomatic patients [1].

Carcinoid tumours with a primarily duodenal location represent less than 2% of the total number of carcinoid gastro-intestinal tumours, accounting for the lack of available data regarding these tumours in the literature [2].

Case Report

We present the case of a 54-year-old male patient with a history of gastro-esophageal reflux disease (GERD) treated with prokinetic and proton pump inhibitor (PPI) therapy, returning for a routine follow-up consultation. Because the patient was still presenting persistent heartburn and bitter taste in the morning despite optimal medical treatment, we decided to perform an upper gastrointestinal endoscopy (UGE).

The UGE revealed a 5 mm sessile polyp on the posterior wall of the duodenal bulb (Figure 1), followed by endoscopic polypectomy. The histopathological examination revealed several small solid nests on the lamina propria. These had uniform appearance, were well delineated, and consisted of round cells with granular eosinophilic cytoplasm in moderate quantities, as well as round normal and hyperchromatic nuclei, with no significant atypia, with an appearance highly suggestive of a neuroendocrine tumour (Figure 2). Immunohistochemical staining (IHC) tested negative for CKAE1/AE3 and positive for chromogranin (Figure 3) and CD56, with a KI-67% index less than 2%. These

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results confirmed the diagnosis of a well-differentiated (G1) duodenal neuroendocrine tumour.

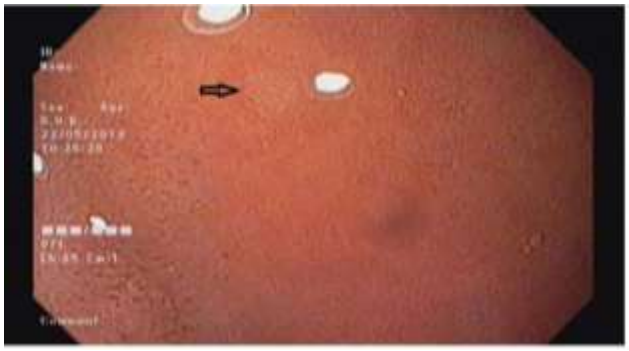

Figure. 1. Upper gastrointestinal endoscopy showing the 5 mm sessile polyp on the posterior wall of the duodenal bulb.

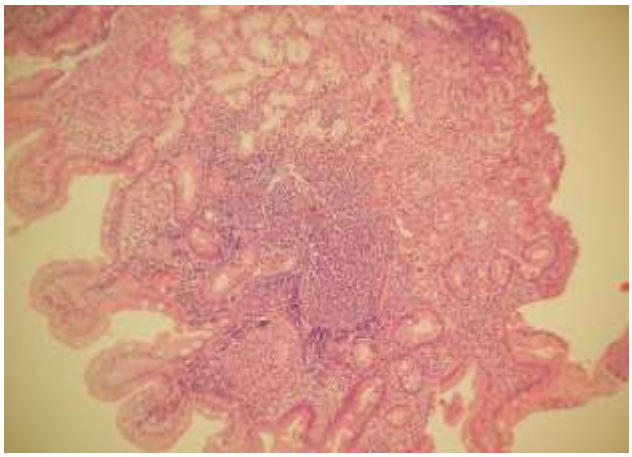

Figure 2. Microscopic examination of the resected piece, H&E, x10. Solid nests of neuroendocrine cells in the duodenal lamina propria.

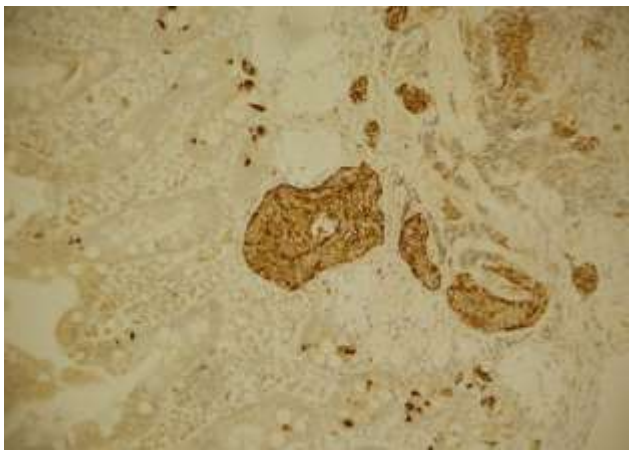

Figure 3. Immunohistochemical staining, x20. Tumour cells diffusely positive for chromogranin (x20).

The serum concentration of chromogranin A (CrA) was within normal limits, with a value of 19.160 ng/ml. According to the consensus published by ENETS, the determination of other specific biological markers (gastrin, somatostatin, urinary 5-hydroxyindoleacetic acid (5-HIAA) is only recommended when functional syndromes are present, the most common being Zollinger-Ellison (ZES) syndrome and carcinoid syndrome [3].

A contrast CT scan of the abdomen and pelvis was performed which did not reveal any other tumours nor regional or distant lymph node involvement.

The patient's final diagnosis was that of a well differentiated (G1) duodenal neuroendocrine tumour pT1 cN0M0 and gastro-esophageal reflux disease (GERD).

The treatment recommended for GERD was PPI therapy, while the treatment recommended for the carcinoid tumour following its resection was periodic surveillance. The follow-up of the patient was conducted according to the ENETS guideline at 6 months, 1 year, and 2 years [3]. Both biological and endoscopic follow-ups were conducted, without revealing any signs of recurrence.

We appreciate that the medium and long-term prognosis is favourable, considering the small size of the primary tumour (5 mm), its location in the duodenal mucosa, the normal values of chromogranin A, the high degree of differentiation (G1), the complete endoscopic resection, the absence of liver metastases, and the favourable evolution during the first two years of follow-up.

The case we are presenting is one of the few reported in the literature of non-secreting NETs located in the duodenum, discovered accidentally and very early on. Jayarama et al. reported on the incidental discovery of two synchronous carcinoid tumours – one gastric and one duodenal [4]. There are two other reported cases of duodenal NETs discovered incidentally during a routine endoscopic examination [5, 6].

Several observational studies have characterized these tumours. The largest study included 59 patients with duodenal carcinoid tumours, of which only 39 were non-secreting [7]. Considering the heterogeneity of these tumours as well as the small number of studies available, at this time we cannot draw precise conclusions regarding the biological behaviour of well-differentiated, non-periampullary, non-secreting duodenal neuroendocrine tumours, as in the case of our patient.

Discussions

Carcinoid tumours are a heterogenous group of tumours with varying behaviours depending on their location [8]. They are most frequently located in the gastro-intestinal (55%) and bronchopulmonary tracts (30%). Within the gastro-intestinal tract, the most frequent location is the small intestine (45%), followed by the appendix, colon, and stomach [2]. Although carcinoid tumours are relatively rare, they are the most frequent malignant tumours of the small intestine (44%). Tumours with a primarily duodenal location represent less than 2%

of the total number of well-differentiated gastro-intestinal neuroendocrine tumours. These are usually solitary lesions of small dimensions – 75% being under 2 cm. They are most frequently located in the first and second part of the duodenum (approximately 90%) [9]. Periampullary tumours are a special category, as studies have shown that they exhibit a different behaviour, leading some authors to suggest they be considered a separate entity [3].

There are five clinico-pathological types of duodenal neuroendocrine tumours described in the literature. In order of frequency, these are: gastrinomas, somatostatinomas, non-functional tumours, gangliocytic paragangliomas, and poorly differentiated tumours [10]. Most duodenal neuroendocrine tumours are restricted to the mucosa and submucosa. However, 40-60% of cases present regional lymph node involvement, while metastatic disease is present in approximately 10% of cases, with the most frequent metastatic site being the liver [3,10].

Usually, the clinical presentation is non-specific. The most commonly described symptoms are abdominal pain, nausea, vomiting, and diarrhea. Obstructive jaundice may appear in the case of periampullary tumours. A small proportion of patients present functional syndromes such as Zollinger-Ellison syndrome (ZES) or carcinoid syndrome. ZES associated with duodenal NETs may appear in relation to both sporadic tumours as well as part of the MEN1 syndrome, in which case there are usually multiple lesions. The carcinoid syndrome appears almost exclusively in the case of metastatic disease [10]. Only one case has been described in the literature referencing the presence of carcinoid syndrome in the absence of metastases [11].

The diagnosis is established through histopathological and immunohistochemical (IHC) examinations. Chromogranin, synaptophysin, PGP 9.5, and/or CD56 are the most sensitive and specific markers in the diagnosis of neuroendocrine tumours [12]. Studies show that 75-100% of duodenal carcinoids test positive for CrA, 80-100% for NSE, and 91% for Leu-7 [13,14]. In general, the most sensitive methods for locating neuroendocrine tumours are CT, magnetic resonance imaging (MRI), and somatostatin receptor scintigraphy (SRS). However, in the case of duodenal tumours, these methods are not as specific, considering that >75% of these tumours are under 1 cm [3]. Studies indicate that conventional imaging techniques detect <15% of tumours <1 cm [2], while SRS approximately 50% [15]. In order to identify the primary tumour, upper gastrointestinal endoscopy remains the most sensitive method, complemented with endoscopic ultrasound when possible, in order to assess local extension. For complete staging, spiral CT/MRI or SRS are recommended [3].

Usually, CrA and urinary 5-HIAA are measured in order to monitor carcinoid tumours. However, 5-HIAA is only specific to serotonin producing tumours, so that its measurement is useful only if carcinoid syndrome is present or if IHC staining detects the presence of serotonin [16]. Routine CrA measurement is recommended for all patients with NETs, regardless of their location [17]. High values appear in 56-100% of duodenal neuroendocrine tumours and they are correlated with the response to treatment [18].

The four main prognostic factors are: tumour stage, grade, resection margins, and chromogranin value. The 5-year survival rate is 80-85% for localized disease, 65-75% for locally advanced disease, and 20-40% for metastatic disease [9].

In order to determine tumour grade, the assessment of the mitotic count/10HPF and/or ki-67 index through IHC is necessary [14].

Usually, the treatment is curative. The endoscopic resection is considered sufficient for small tumours (<1cm). There is no consensus regarding intermediary tumours (1-2 cm), with some authors recommending surgery and others recommending endoscopic resection. More studies are needed in order to standardize treatment procedures [2,19]. Tumours larger than 2 cm are treated exclusively by surgery. In the case of metastatic disease, the resection of the primary tumour along with the local treatment of metastases (surgery, ablation) is common practice when possible [3,10]. Surgical excision is preferred for periampullary tumours, regardless of tumour size, as studies indicate that the presence of metastases is not correlated with the size of the primary tumour in these cases [20-22].

Systemic therapy applies only to the metastatic disease, when local treatment of the metastases is not possible. This includes somatostatin analogues and peptide receptor radionuclide therapy, while chemotherapy is used only for poorly differentiated tumours. Symptomatic treatment is recommended depending on the functional syndrome present in secreting tumours [23].

Highlights

- ✓ Primary duodenal carcinoid tumours represent a heterogenous group of rare well-differentiated neuroendocrine tumours of the gastro-intestinal tract;
- ✓ In the past years, there has been an increase in the incidence of these tumours, partly explained by more frequent detection by upper gastrointestinal endoscopy, which allows for an early diagnosis and a better prognosis;

Conclusions

The incidence of duodenal carcinoid tumours has risen over time due to increased detection by upper gastrointestinal endoscopy, which allows for an early diagnosis, in an asymptomatic stage. Reporting these cases is important in order to establish the most appropriate management and follow-up for these patients, especially for those with tumours of 1-2 cm.

References

1. Yao J, Hassan M, Phan A, Dagohoy C, Leary C, Mares JE et al. One hundred years after "carcinoid"; epidemiology of and prognostic factors for neuroendocrine tumors in 35,825 cases in the United States. *J Clin Oncol* 2008; 26(18): 3063–72. doi:10.1200/JCO.2007.15.4377.
2. Mullen JT, Wang H, Yao JC, Lee JH, Perrier ND, Pisters PW et al. Carcinoid tumors of the duodenum. *Surgery* 2005; 138. doi:10.1016/j.surg.2005.09.016
3. Jensen RT, Rindi G, Arnold R, Lopes JM, Brandi ML, Bechstein WO et al. Well-Differentiated Duodenal Tumor/Carcinoma (Excluding Gastrinomas). *Neuroendocrinology* 2006; 84: 165–172. doi: 10.1159/000098008
4. Jayaram P, Shindel A, Buxbaum J. Duodenal Gastrinoma Discovered on Evaluation for Incidental Gastric Carcinoid. *Clin Gastroenterol Hepatol*. 2017 Oct;15(10):e154-e155. doi:10.1016/j.cgh.2017.03.006
5. Debnath CR, Debnath MR, Haque MA, Das SN, Moshwan MM, Karim R et al. Duodenal carcinoid tumor - a case report. *Mymensingh Med J*. 2014 Jan;23(1):150-3.
6. Brandimarte G, Tursi A. Incidental diagnosis and endoscopic resection of asymptomatic duodenal carcinoid during a routine upper gastrointestinal endoscopy. *Dig Liver Dis.* 2004 Jun;36(6):432-3. doi:10.1016/j.dld.2004.02.005.
7. Burke AP, Sobin LH, Federspiel BH, Shekitka KM, Helwig EB. Carcinoid tumors of the duodenum. A clinicopathologic study of 99 cases. *Arch Pathol Lab Med.* 1990; 114:700-4.
8. William ED, Sandler M. The classification of carcinoid tumours. *Lancet.* 1963;1(7275):238. doi: 10.1016/s0140-6736(63)90951-6
9. Modlin IM, Champaneria MC, Chan AK, Kidd M. A three-decade analysis of 3,911 small intestinal neuroendocrine tumors: the rapid pace of no progress. *Am J Gastroenterol.* 2007; 102(7): 1464. doi: 10.1111/j.1572-0241.2007.01185.x
10. Hoffmann KM, Furukawa M, Jensen RT. Duodenal neuroendocrine tumors: classification, functional syndromes, diagnosis and medical treatment. *Best Pract Res Clin Gastroenterol* 2005; 19: 675–697. doi: 10.1016/j.bpg.2005.05.009
11. Ravikiran N, Kamesh K, Odaiyappan K. Duodenal carcinoid with carcinoid syndrome. *BMJ Case Rep*. 2014; 2014. doi: 10.1136/bcr-2013-202159
12. Erickson LA, Lloyd RV. Practical markers used in the diagnosis of endocrine tumors. *Adv Anat Pathol*. 2004; 11:175-89.
13. Heymann MF, Hamy A, Triau S, Miraille E,Toquet C, Chomarat H et al: Endocrine tumors of the duodenum. A study of 55 cases relative to clinicopathological features and hormone content. *Hepatogastroenterology* 2004; 51:1367–1371.
14. Soga J. Endocrinocarcinomas (carcinoids and their variants) of the duodenum. An evaluation of 927 cases. *J Exp Clin Cancer Res* 2003; 22: 349–363.
15. Gibril F, Jensen RT. Diagnostic uses of radiolabelled somatostatin-receptor analogues in gastroentero-pancreatic endocrine tumors. *Dig Liver Dis.* 2004; 36:S106–S120.
16. O'Toole D, Grossman A, Gross D, Delle Fave G, Barkmanova J, O'Connor J et al. ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumors: biochemical markers. *Neuroendocrinology*. 2009;90(2):194-202. doi:10.1159/000225948
17. Modlin IM, Gustafsson BI, Moss SF, Pavel M, Tsolakis AV, Kidd M. Chromogranin A-biological function and clinical utility in neuro endocrine tumor disease. *Ann Surg Oncol*. 2010;17(9):2427. doi: 10.1245/s10434-010-1006-3
18. Ardeleanu V, Dobre M, Georgescu EM. Deep Facial Wrinkle Treatment Outcome After First Injection of Reticulated Hyaluronic Acid. *Revista de chimie* 2015; 66(12): 2129-2131.
19. Massironi S, Rossi RE, Casazza G, Conte D, Ciafardini C, Galeazzi M et al. Chromogranin A in diagnosing and monitoring patients with gastroenteropancreatic neuroendocrine neoplasms: a large series from a single institution. *Neuroendocrinology.* 2014;100(2-3):240-9. doi:10.1159/000369818
20. Soni SC, Mehta N, Ray S, Nundy S. Intra-abdominal hypertension and abdominal compartment syndrome in patients undergoing gastrointestinal surgery. *J Clin Invest Surg*. 2019; 4(2): 101-107. DOI: 10.25083/2559.5555/4.2/101.107

21. Zyromski NJ, Kendrick ML, Nagorney DM, Grant CS, Donohue JH, Farnell MB et al. Duodenal carcinoid tumors: how aggressive should we be? *J Gastrointest Surg* 2001; 5: 588–593.
22. Makhlouf AP, Burke LH. Carcinoid tumors of the ampulla of Vater: a comparison with duodenal carcinoid tumors. *Cancer* 1999; 85: 1241–1249. doi:10.1002/(sici)1097-0142(19990315)85:6<1241::aid-cncr5>3.0.co;2-4
23. Delle Fave G, Kwekkeboom DJ, Van Cutsem E, Rindi G, Kos-Kudla B, Knigge U et al. ENETS Consensus Guidelines for the Management of Patients with Gastroduodenal Neoplasms. *Neuroendocrinology* 2012;95:74–87. doi:10.1159/000335595.