Collision tumor of the ampulla of Vater: Carcinoid and adenocarcinoma

J. Ferrando Marco, A. Pallas Regueira, D. Moro Valdezate and C. Fernández Martínez

Departments of Pathology and Surgery. Sagunto Hospital. Valencia, Spain

RESUMEN

Presentamos un caso de tumor de colisión periampular en el que coexisten un tumor carcinoide de pared duodenal y un adenocarcinoma de cabeza de páncreas. El paciente era un varón de 64 años con historia reciente de diarreas al que se diagnosticó una ictericia obstructiva.

Histopatológicamente el tumor resecado mostraba dos neoplasias independientes. Una de ellas constituida por cordoncillos sólidos de células neuroendocrinas que afectaba pared duodenal. La otra está formada por un adenocarcinoma bien diferenciado procedente del páncreas. Ambas neoplasias fueron confirmadas inmunohistoquímicamente.

Según la literatura anglosajona revisada tan sólo hemos encontrado seis casos de esta rara coexistencia neoplásica.


ABSTRACT

We report the case of a periampullary collision tumor, in which a duodenal-wall carcinoid and an adenocarcinoma of the head of the pancreas coexisted. We describe the case of a 64-year-old man with a recent history of diarrhea, who was diagnosed with obstructive jaundice. A duodeno-pancreatectomy was performed, and the specimen showed two independent neoplasms in the histopathologic study. Solid cords and nests of neuroendocrine cells in the duodenal wall formed the carcinoid tumor, whereas the other neoplasm was made up of a well-differentiated adenocarcinoma of the pancreas. Both were confirmed by immunohistochemical analysis. According to the literature reviewed, this is the sixth reported case of this rare neoplastic association.

Key words: Carcinoïd. Duodenum. Adenocarcinoma. Pancreas.

INTRODUCTION

Pancreatic adenocarcinomas represent the 98% of periampullary pancreatic neoplasms (1,2). One half of the remaining 2% are carcinoid tumors. Due to the confluence of numerous closely-connected anatomic structures in this area their precise origin is very difficult to establish; this is why we define periampullary as the area including the head of the pancreas, duodenal wall, and ampulla of Vater (2).

Carcinoid tumors are usually well-defined neoplasms formed by cells with typical cytoplasmic endocrine secretion grains. These cells are a part of the APUD or enterochromaffin system in the gastrointestinal tract (3). They are most commonly located in the appendix, followed by the small intestine, rectum, and stomach (3-5). Their location in the ampulla of Vater is extremely rare (5). The coexistence of both carcinoid and adenocarcinoma tumors in the periampullary area is a very exceptional finding, described only in five references in literature reviewed (4,6-8).

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Correspondence: José Ferrando Marco. Servicio de Anatomía Patológica. Hospital de Sagunto. C/ Ramón y Cajal, s/n. 46520 Puerto de Sagunto. Valencia, Spain. e-mail: ferrando_josmar@gva.es
We report a case of a collision tumor made up of an adenocarcinoma in the head of the pancreas –involving periampullary area– and a carcinoid tumor, both of them closely related. Nevertheless, they are two independent tumors because they have different histologic and immunophenotypic features. Therefore, we exclude the unusual, while more frequent, possibility of it being a compound or mixed tumor (8,9).

CASE REPORT

A 64-year-old man with a past medical history of insulin-dependent diabetes mellitus, dyslipemia, and recurrent renal colic presented with diarrhea, some steatorrhea episodes, paraneoplastic syndrome, and epigastric pain for the last two months. The patient had increasing jaundice, choluria, and acholia, and was then admitted to the gastrointestinal ward from the emergency room.

Physical examination showed a good general status –the patient had no fever and was well-hydrated, with associated skin and mucosal jaundice. During the abdominal examination, a tender gallbladder was palpated, without peritoneal signs. The rest of the exploration was normal.

In his blood test, we found high serum levels of bilirubine (17 mg/dl), alkaline phosphatase (2522 U/l), and gamma-glutamyl transpeptidase (107 U/l). There was no leukocytosis, and viral hepatitis markers were negative. Alpha-fetoprotein and CA19.9 were normal, but the serum carcino-embrionary antigen (CEA) was slightly elevated (7.6 ng/dl).

The ultrasonographic study disclosed slightly dilated intra- and extra-hepatic bile ducts, as well as a moderately dilated common bile duct; similarly, the gallbladder was hydropic and contained no gallstones. A hypoechoic mass, 2 cm in diameter, was found in the head of the pancreas, but this finding was not confirmed by the CT scan, which, however, showed a dilated Wirsung duct; no lymph nodes were found. MRI cholangiopancreatography confirmed these findings. With the clinical diagnosis of tumor of the ampulla of Vater, a gastro-duodenoscopy was performed, which revealed no abnormalities.

Under the diagnosis of malignant obstructive jaundice, the patient underwent surgery one week after admission. During the surgery, the presence of a neoplastic mass in the head of the pancreas was confirmed; therefore, a cephalic duodeno-pancreatectomy with pyloric preservation and pancreaticogastrostomy was performed.

The macroscopic exam of the specimen showed two clearly-differentiated tumor areas. One of them was in the duodenal wall and was 1 cm in diameter with well-defined limits; the other was located in the head of the pancreas and was 3 cm in diameter with irregular borders (Fig. 1).

In the microscopic exam, cords of uniform polygonal cells infiltrating the muscular layers of the wall formed the duodenal tumor. Their nuclei had low-grade of atypias and very low mitotic activity (Fig. 2). The pancreatic tumor was formed by atypical glandular
structures with cell columns infiltrating the duodenal wall. Their nuclei were very atypical with a high mitotic index.

Immunohistochemical techniques allowed the definition of both tumors. Their immunophenotypes were completely different: the duodenal tumor was negative for CEA and positive for chromogranin (Fig. 2), STH, and glucagon; in contrast, the pancreatic adenocarcinoma was only positive for CEA (Fig. 3).

The patient spent the early postoperative period in the Intensive Care Unit, and the rest of his recovery period in the General and Digestive Surgery Department. He had a favorable evolution and was discharged 19 days after surgery. Then the Department of Oncology treated the patient with adjuvant chemotherapy including four gemcitabine 1,000 g/m² cycles: one for seven weeks and three for three weeks, resting one week.

He had a good evolution for a few months, but then presented with continuous pain in the right hypochondrium, nausea, and vomiting. Imaging studies showed no findings. The patient underwent surgery again nine months after his first procedure. A non-resectable neoplastic relapse was confirmed. The patient suffered a progressive deterioration of his general condition, and died 14 months after his first surgery.

DISCUSSION

A collision tumor is defined as the simultaneous coexistence of two independent tumors located or not in the same area. Nevertheless, composed or mixed tumors are formed by more than one type of neoplastic tissue with histological characteristics of both tumors; in addition they have the same histological origin, as shown by transition areas (2,3).

Carcinoid tumors are uncommon neoplasms. They represent one to five percent of tumors in the gastrointestinal tract (2,3). Periampullary carcinoid tumors represent the 1% of the tumors in this location, and they have no correlation with either gender or age (4). They are usually small tumors (less than 2 cm), predominantly located in the first and second duodenal portion, including the ampulla of Vater (4). Carcinoid tumors are more infrequent than adenocarcinomas in this location (6).

Obstructive jaundice is the first clinical symptom in most patients with neoplasm in the head of the pancreas or duodenal carcinoid tumor (5,10-14). However, no carcinoid syndrome is present in most cases (5,12-14). In the present case, as well as in those in the literature reviewed, clinical symptoms were due to the adenocarcinoma (4,6,7), even though our patient experienced persistent diarrhea for two months before admission, which could be ascribed to the carcinoid tumor.

Focussing on periampullary carcinoid tumors, these develop at age 48 to 51 on average, and are slightly more predominant in men (52%) than in women (48%) (12,13,15). In contrast, periampullary adenocarcinoma is more common between 60 and 65 years of age, and predominates in women (2:1) (2).

Obstructive jaundice occurs in 60% of patients with carcinoid tumors (5). Preoperative diagnosis is infrequent. This is only achieved in 15% of cases because of the submucosal growth of these tumors (5). Symptoms usually last more than three months before diagnosis, in contrast to periampullary or pancreatic adenocarcinoma. The second more frequent symptom is unspecific upper abdominal discomfort (5,15).

Von Recklinghausen’s disease is commonly associated with periampullary carcinoid tumors in the literature reviewed (25-33%) (4,5,15). These tumors usually produce more than one hormone, mainly somatostatin and gastrin (4).

Most carcinoid tumors are located in the submucosa; this is a surprising feature considering that these tumors are thought to emerge from endocrine cells in the mucosa (4). This statement gave rise to an important clinical concern, as preoperative diagnosis was correct in only fewer than 15% of cases (5). This fact can be explained by the pattern of growth of these tumors, as most patients exhibit an undamaged duodenal mucosa, and carcinoid tumors seldom emerge through the ampulla of Vater. This is why biopsies are usually negative. It would be necessary to perform deep punch biopsies to achieve an accurate diagnosis (5).
Endoscopic retrograde cholangiopancreatography with duodenoscopy is the diagnostic method of choice (5). Complementary explorations usually do not confirm the coexistence of both tumors. This finding is frequently an incidental discovery during the histopathologic study of the specimen (4,6,7).

In the case we report in this article, microscopic identification was easy because of on the one hand, the pancreatic neoplasm was formed by atypical, CEA-positive glands, and on the other hand, the carcinoid tumor showed cords and nests of CEA-negative cells that were positive for neuroendocrine markers such as chromogranin, somatostatin, and glucagon. Therefore, we excluded the possibility of a mixed or compound tumor, and we demonstrated the presence of two ontogenetically different neoplasms.

With respect to the treatment, carcinoid tumors are essentially low-malignant lesions with a five-year survival after surgery over 90% (5,7,15). In our patient, treatment was determined by the adenocarcinoma of the pancreas, which made duodeno-pancreatectomy mandatory.

REFERENCES