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Synchronous cancer, gastric adenocarcinoma and renal cell cancer

Cáncer sincrónico, adenocarcinoma gástrico y cáncer de células renales

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Keywords: Gastric adenocarcinoma, seal ring cells, renal cancer, chromophobe cells.

Palabras clave: *Adenocarcinoma gástrico, células anillo sello, cáncer renal, células cromófobas.*

ABSTRACT

We present the case of a 68-year-old man, with abdominal distension, dyspepsia, progressive dysphagia from solids to liquids. A CT scan with contrast showed thickening of the antral and pyloric mucosa of 1.7 cm in addition to a right renal tumor. Endoscopy reported an infiltrating gastric neoplasm (Borrmann II adenocarcinoma). A total gastrectomy, D1 lymphadenectomy, esophageal aneurysm with a circular stapler, and Roux-en-Y stapler with latero-terminal anastomosis and a right radical nephrectomy were done. The diagnoses of gastric adenocarcinoma PT4AN1M0 EC IIIA and renal cell carcinoma of the chromophobe variety, PT2N0M0 ECII, were made. Synchronous cancers are infrequent. The incidence of synchronous renal cell carcinoma with gastric cancer is low (0.11-0.37%). In Mexico, renal cancer accounts for 1.5% of all neoplasms. We present the case of a synchronous gastric cancer with a renal tumor of rare histological origin.

RESUMEN

Presentamos el caso de paciente masculino de 68 años de edad, quien inicia su padecimiento con distensión abdominal, dispepsia y disfagia progresiva de sólidos a líquidos. Se comienza protocolo de estudio con tomografía contrastada donde se demuestra engrosamiento de la mucosa antral y pilórica de 1.7 cm, además de un tumor renal derecho. Se realiza panendoscopia que reporta neoplasia gástrica infiltrante (adenocarcinoma Borrmann II). Se efectúa intervención quirúrgica en la que se lleva a cabo una gastrectomía total, linfadenectomía D1, esofagoyeyuno-anastomosis con engrapadora circular y Y-de-Roux con enteroentero-anastomosis-laterotermina, así como nefrectomía radical derecha. Se diagnostica adenocarcinoma gástrico PT4AN1M0 EC IIIA y carcinoma de células renales variedad cromófoba PT2N0M0 ECII. Las presentaciones sincrónicas en pacientes con este tipo de neoplasia son infrecuentes. La incidencia del carcinoma de células renales síncronas con cáncer gástrico es bastante baja (0.11-0.37%). En nuestro país, el cáncer renal representa el 1.5% de todas las neoplasias. Presentamos el caso de un cáncer gástrico sincrónico con un tumor renal de estirpe histológico raro.

INTRODUCTION

Synchronous neoplasias are infrequent. In our country, renal cancer represents 1.5% of all neoplasms[1] and usually manifests in advanced stages with the characteristic triad of hematuria, pain, and abdominal tumor.[1] Four histological types are currently recognized: clear cell carcinoma, chromophobe cell carcinoma, papillary or chromophilic carcinoma, and carcinoma of the distal collecting ducts. Chromophobe cell carcinoma (CCC) is a renal epithelial neoplasm of the adult presenting between the fourth and sixth decades of life. It is little known in our environment, hence frequently diagnosed as clear cell carcinoma.[2] Gastric cancer (GC) is the most frequent gastrointestinal neoplasm worldwide. It occupies the second place in cancer mortality worldwide and represented 3% of the cancers diagnosed in Mexico in the year 2000. Sánchez-Barriga reports that, between 2002-2012, 69,107

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patients died from GC in Mexico. In 2000, there were 5,003 deaths from GC and 5,459 patients died from it in 2012. The age-adjusted mortality rate for GC was 5.6 per 100,000 population in 2012, and this study shows that the GC mortality rate in Mexico decreased from 7.5 per 100,000 population in the year 2000.[3-6]

From 2005 to 2015 (10 years), a total of 21,761 deaths from gastric cancer were registered, with an average mortality rate of 8.1 × 100,000 in Social Security affiliates. The overall mortality rate of gastric cancer has shown a gradual decrease (2005 rate 8.08 × 100,000 versus 2015: rate .6.9 × 100,000 $p < 0.001$).[4]

The incidence of stomach cancer is highest in East Asia, where diagnosis in early stages (stage IA) is 30%. 70% is identified in advanced stages, due to screening programs, and 88% present at stage III or IV at diagnosis.[5]

We present a case of concomitant gastrectomy and nephrectomy in a patient with synchronous gastric and renal cell cancers. The presence of these neoplasms in synchrony has a low incidence and there have been few case reports and review of the literature. It is a challenge for the general surgeon and the oncologist to perform such a complex surgical procedure.

PRESENTATION OF THE CASE

A 68 year-old male patient with history of diabetes mellitus, smoking, and chronic alcoholism for more than 20 years. He denied surgical history. The patient presented with intermittent abdominal distension, dyspepsia, progressive dysphagia from solids to liquids. He denied weight loss or data of gastrointestinal tract bleeding. A CT scan with intravenous contrast reported a right renal tumor of 7 × 6 × 4 cm with rounded edges, well defined, and a heterogeneous hypodense center related to cystic or necrotic degeneration *(Figure 1)*. After intravenous contrast, a "claw sign" was present, with enhancement at 20 HU and a delayed triphasic phase enhancement of 10 HU. Also, a distended stomach with thickening of the antral and pyloric mucosa of 1.7 cm was found, with no hepatic or distant metastases. Panendoscopy showed infiltrating gastric neoplasia (Borrmann II adenocarcinoma) *(Figure 2)*. The histopathological result of the gastric biopsy reported a poorly differentiated diffuse infiltrating adenocarcinoma with signet ring cells. The CA 19-9 marker value was 126 U/ml.

A tumor was found in the lesser curvature of the stomach, the antrum, and pylorus, with extension towards the celiac trunk, including the left gastric artery and the hepatic artery up to the gastroduodenal artery. It also extended to the posterior aspect, with adherences to the body of the pancreas, tumor implants in the transverse mesocolon near the angle of Treitz, and adenomegaly in the greater omentum. The esophagogastric junction was free of tumor. It was stratified as T4aN2M0.

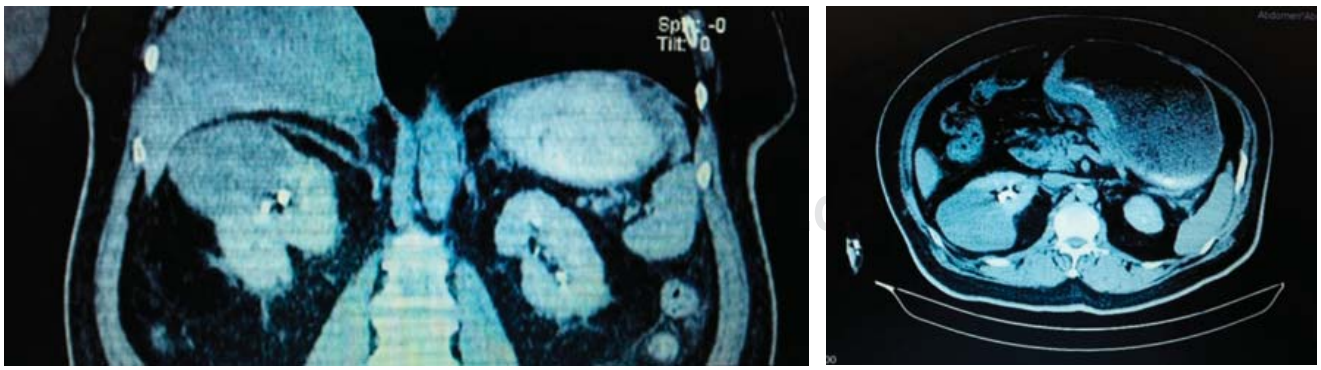

Figure 1: *Computed axial tomography shows abdomino-pelvic contrasted axial and coronal sections showing renal tumor with intermediate data of malignancy, stomach with gastroparesis, as well as thickening of the antral and pyloric mucosa.*

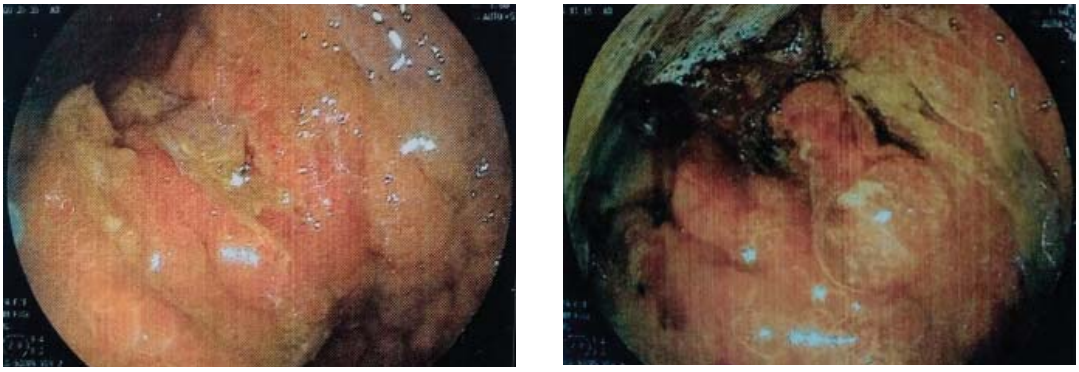

Figure 2: *Upper endoscopy with Borrmann II infiltrating gastric neoplasia.*

Total gastrectomy, D1 lymphadenectomy, esophago-jejunal anastomosis with 29 mm circular stapler, and entero-enteric latero-terminal anastomosis with 55 mm linear Y-de-Roux stapler *(Figures 3 and 4)*.

The right renal region was explored and scarce citrine free fluid was found, with a solid tumor in the upper pole of the right kidney, measuring 10 × 5 cm, and a renal vein without thrombus. The renal tumor was assigned a staging of T2bN0M0. During the same surgical procedure, a radical right nephrectomy was done.

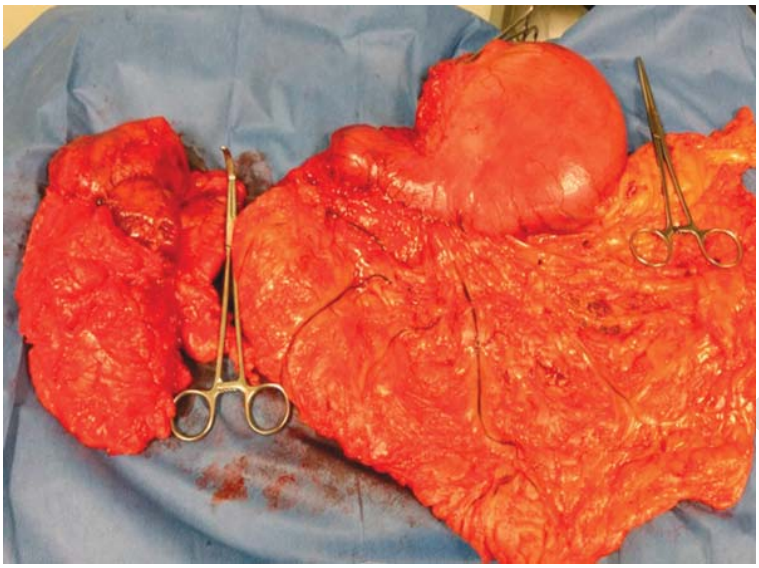

Figure 3: *Surgical specimen resulting from total gastrectomy and right radical nephrectomy.*

The patient had a good postoperative evolution, with no data of anastomosis leakage. He tolerated the oral route, ambulated on the fifth postoperative day, and was discharged on the seventh day.

The definitive histopathological study reported:

A) Esophageal mucosa, negative for neoplastic cells.
B) A 10 cm tumor. Microscopically, a poorly differentiated diffuse infiltrating adenocarcinoma with signet ring cells. It infiltrated to the serosa, with extensive lymphatic and perineural invasion. There were implants in the omentum and metastasis to two lymph nodes. The proximal and distal surgical edges were tumor-free.
C) Renal cell carcinoma, chromophobe variety, 7.5 cm of greater diameter, without infiltration to the capsule, negative hilum structures for neoplasia.

Gastric adenocarcinoma PT4AN1M0 EC IIIA and renal cell carcinoma chromophobe variety PT2N0M0 ECII were diagnosed.

DISCUSSION

The incidence of gastric cancer in presentation with another synchronous primary cancer varies from 2 to 10%. Colorectal, lung, and liver tumors are often reported in the literature; however, synchronous renal cell carcinoma is rare (0.11-0.37%). The

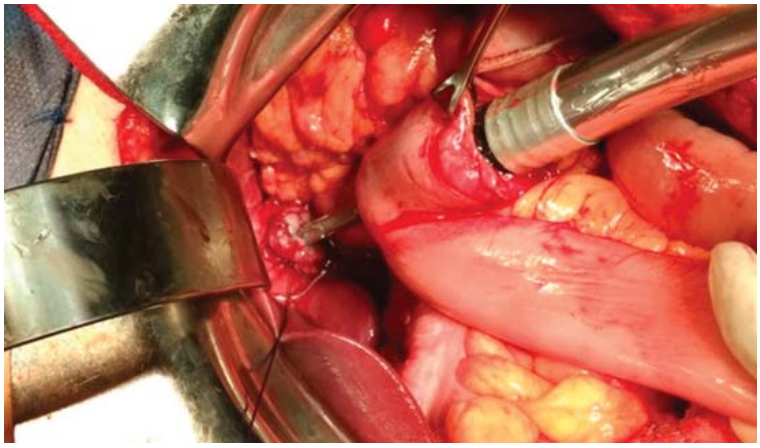

Figure 4: *Jejunoileal anastomosis with 29 mm circular stapler.*

incidence of synchronous cancer is higher in early-stage gastric neoplasms than in advanced stages (5.2% versus 2.4%).[7] In this work, the definition of Warren and Gates[8] was used to identify synchronous tumors: each tumor must present as a definite picture of malignancy, each must be distinct, and the possibility that one is a metastasis must be excluded.

Ikeda et al[9] state that gastric cancer has been increasingly diagnosed in early stages in Japan, with an increase in synchronous primary neoplasms, specifically colorectal and pulmonary. Eighty percent of lung tumors were diagnosed as metachronous. 65 to 80% of colorectal, renal, and gallbladder tumors were synchronous. Concerning age at presentation and gender, primary tumors of the stomach occurred more frequently in men and increased directly proportional to age. In this study, the second primary tumor was the leading cause of death.

Another tumor that occurs synchronously with other gastrointestinal neoplasms is the gastrointestinal stromal tumor (GIST). The malignant neoplasm most frequently associated with GIST is gastric cancer, followed by esophageal cancer. Multiple studies show that 14-27% of patients with GIST have synchronous gastrointestinal neoplasms.[10]

Renal cell carcinoma (RCC) generally has a higher incidence between 60 and 70 years of age, with a predominance in males. Its most relevant risk factors are smoking and obesity. Mortality from RCC has decreased steadily over the last decades. A recent analysis showed a decrease in mortality in men, from 4.8 per 100,000 from 1990 to 1994, to 4.1 per 100,000 from 2000 to 2004. This decrease in mortality is also attributed to incidental diagnosis by radiodiagnostic imaging.[6,11]

Chromophobe cell carcinoma is an uncommon malignant tumor, accounting for 5-8% of RCCs, and is thought to arise from the intercalated cells of the collecting ducts. These tumors present in a sporadic or familial pattern, and clinically in 10-20% of cases, and tumors larger than 10 cm present with the classic clinical triad of vertebral rib pain, palpable tumor, and hematuria. Pulmonary metastases are the most common (50%) and bone metastases (33%), and radical nephrectomy is the treatment of choice.[7,12]

In gastric cancer, resectability is 60-80% and postoperative mortality ranges from 6 to 14%. The five-year survival rate is 8-26%.[13]

In terms of histological type, gastric carcinomas are classified as follows: signet ring carcinoma (SRC) and non-signet ring carcinoma (NSC), the latter group includes tubular, papillary, mucinous, and other less frequent varieties such as adenosquamous and pure squamous. Gastric cancer originates in the mucosa without metaplasia at the proliferative zone of the neck of the glands and, according to the classification of the World Health Organization (WHO). More than 50% of the neoplastic cells are signet ring cells. This histological variety represents between 3% and 39% of gastric carcinomas.[14,15]

The etiology and pathogenesis of multiple primary neoplasms are still not clearly explained. The interaction of genetic and environmental risk factors common to both cancers could cause multiple malignancies such as renal cell cancer and gastric adenocarcinoma. Common risk factors include smoking, pollution, ultraviolet light, chemotherapy, radiotherapy, and endocrine factors. These factors may act individually or in combination.[16]

CONCLUSION

Concomitant surgery to treat gastric cancer and renal cell carcinoma is rare. Patients with gastric cancer are at risk of developing an additional second primary form of cancer, so surgeons should attempt to diagnose synchronous cancers. The risk factor mostly reported in the world literature is smoking, which influences gastric cancer and the development of synchronous neoplasms, either pulmonary or renal. Most renal tumors are found incidentally by radiodiagnostic studies such as tomography.[17]

The survival rate for gastric adenocarcinoma is 84.1% at three years and 69.3% at five years in patients with a second primary cancer. At ten years, survival rates are 69.3% for patients with gastric cancer with no other primary and 40.1% with a second primary cancer. This difference between the two groups is statistically significant.[11,18]

Current American Urological Association guidelines regarding the treatment of clinical stage I renal masses lack an explicit recommendation for clinicians to be aware of the possibility of a second primary neoplasm.[8]

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