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Gangliocytic Paraganglioma: A Rare Etiology of Obstructive Jaundice

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Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Patient: Male, 32-year-old
Final Diagnosis: Gangliocytic paraganglioma
Symptoms: Jaundice
Medication: —
Clinical Procedure: —
Specialty: Gastroenterology and Hepatology • Pathology • Radiology • Surgery

Objective: Rare disease

Background: Gangliocytic paraganglioma is an extremely rare tumor, with only 263 reported cases. This tumor has heterogeneous clinical presentation, with gastrointestinal bleeding being the most common. However, jaundice is a relatively unusual presentation, seen in less than 5% of all cases.

Case Report: We report the case of a 32-year-old man who presented with abdominal pain and jaundice. He reported having similar episodes of this pain recently, but they were milder in severity. On examination, there was a tenderness in the right upper quadrant with a positive Murphy sign. Laboratory investigation revealed total bilirubin of 3.6 mg/dL with a direct bilirubin of 3.0 mg/dL, alkaline phosphatase of 323 IU/L, and γ -glutamyltransferase level of 1153 IU/L, giving the impression of obstructive jaundice. The abdominal ultrasound examination revealed a normal common bile duct diameter with no thickening or pericholecystic fluid noted. Subsequently, the patient underwent endoscopic retrograde cholangiopancreatography, which revealed a mass in the second part of the duodenum. Histopathological examination of biopsy specimens obtained by fine-needle biopsy revealed an unencapsulated submucosal lesion with epithelioid, spindle, and ganglion cells. The spindle cells expressed positive immunohistochemical staining for S100, synaptophysin, and chromogranin. These findings were consistent with the diagnosis of gangliocytic paraganglioma. Surgical resection of the tumor was advised. However, the patient refused the operation despite the recommendation of the oncology team.

Conclusions: Gangliocytic paraganglioma is a very rare tumor that may present with a clinical picture mimicking a biliary disease. Clinicians should have a high index of suspicion for duodenal lesions in patients presenting with obstructive jaundice with no evidence of biliary stones.

Keywords: Abdominal Pain • Duodenal Neoplasms • Jaundice, Obstructive

Full-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/931640>



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Background

Gangliocytic paraganglioma is a rare neuroendocrine tumor that was first described in 1957 by Dahl et al [1]. Since then, there have been 263 reported cases of gangliocytic paraganglioma according to review in 2018 [2]. Notably, the term “gangliocytic paraganglioma” was first coined in 1971 by Kepes and Zacharias [3]. This tumor has a male predilection and a wide age range of presentation, from 15 to 84 years [2].

This tumor has a heterogeneous clinical presentation. We report the case of a man who presented with a clinical picture of biliary disease. After a thorough examination of the patient, a duodenal gangliocytic paraganglioma was diagnosed.

Case Report

A 32-year-old man presented to the Emergency Department with a 4-h history of severe abdominal pain in the right upper quadrant. He reported having similar episodes of this pain recently, but they were milder in severity. Such episodes were precipitated by meal intake. The pain was not associated with nausea or vomiting. He also noticed a yellowish discoloration of his skin and eyes over the previous days. There was no change in the urine or stool color. The patient did not report any history of fever or weight loss. He was otherwise healthy, and his past medical, surgical, social, and family history were noncontributory.

Upon presentation, he was icteric and his vital signs were as follows: blood pressure 128/84 mmHg, pulse rate 60 beats/min, respiratory rate 12 breaths/min, temperature 37.1°C, and oxygen saturation 97% on room air. The abdominal examination revealed tenderness in the right upper quadrant with a positive Murphy sign. The abdomen was soft, with no guarding or rigidity. The rest of the examination results were normal. Additionally, the patient’s blood analysis revealed a hemoglobin level of 14.8 g/dL, a leukocyte count of $4.8 \times 10^3/\mu\text{L}$, a platelet count of $290 \times 10^3/\mu\text{L}$, total bilirubin of 3.6 mg/dL with a direct bilirubin of 3.0 mg/dL, alkaline phosphatase level of 323 IU/L, γ -glutamyltransferase level of 1153 IU/L, alanine transaminase level of 685 IU/L, and aspartate transaminase level of 319 IU/L. His levels of amylase, urea, and electrolytes were within normal ranges. The patient had a normal coagulation profile and a negative viral hepatitis serology. In light of these findings, the patient was admitted for further evaluation and management of obstructive jaundice.

Abdominal ultrasound examination revealed numerous echogenic foci lining the gallbladder with posterior acoustic shadowing denoting cholelithiasis and the presence of a positive Murphy sign. The common bile duct had a normal diameter



Figure 1. Endoscopic view of ulcerated mass lesion of the duodenum.

of 6 mm. No wall thickening or pericholecystic fluid was noted. The patient was then prepared for endoscopic retrograde cholangiopancreatography. However, technical difficulties were experienced due to insufficient sedation and an inability to advance the scope through the second part of the duodenum owing to a mass lesion (Figure 1). Hence, the procedure was aborted after taking biopsy specimens by fine-needle aspiration. A stent was placed to relieve obstruction. Subsequently, the patient underwent magnetic resonance cholangiopancreatography, which demonstrated a well-defined broad-based pedunculated solid mass lesion within the lumen of the second part of the duodenum that was inseparable from the ampulla of Vater (Figure 2). Two small calculi were noted in the lower part of the common bile duct. There was mild diffuse thickening of the gallbladder wall without pericholecystic fat stranding or free fluid collection. There was no dilatation of the pancreatic ducts. Histopathological examination of the biopsy specimens revealed a submucosal lesion that appeared unencapsulated and was composed of epithelioid, spindle, and ganglion-like cells (Figure 3). The spindle cells showed immunohistochemical positivity for S100, synaptophysin, and chromogranin. These findings were consistent with the diagnosis of gangliocytic paraganglioma. A staging computed tomography scan demonstrated an ampullary mass lesion measuring $2.0 \times 2.7 \times 3.4$ cm along with multiple enlarged mesenteric lymph nodes. No abnormalities were found in the thoracic region.

During the hospital course, the patient experienced multiple spikes of fever and elevation of leucocytes up to $13.0 \times 10^3/\mu\text{L}$. Based on these findings, a multidisciplinary oncology team decided to start intravenous piperacillin/tazobactam 4.0 g/0.5 g every 8 h for suspected cholangitis. The patient showed clinical and laboratory improvement. He was discharged on oral

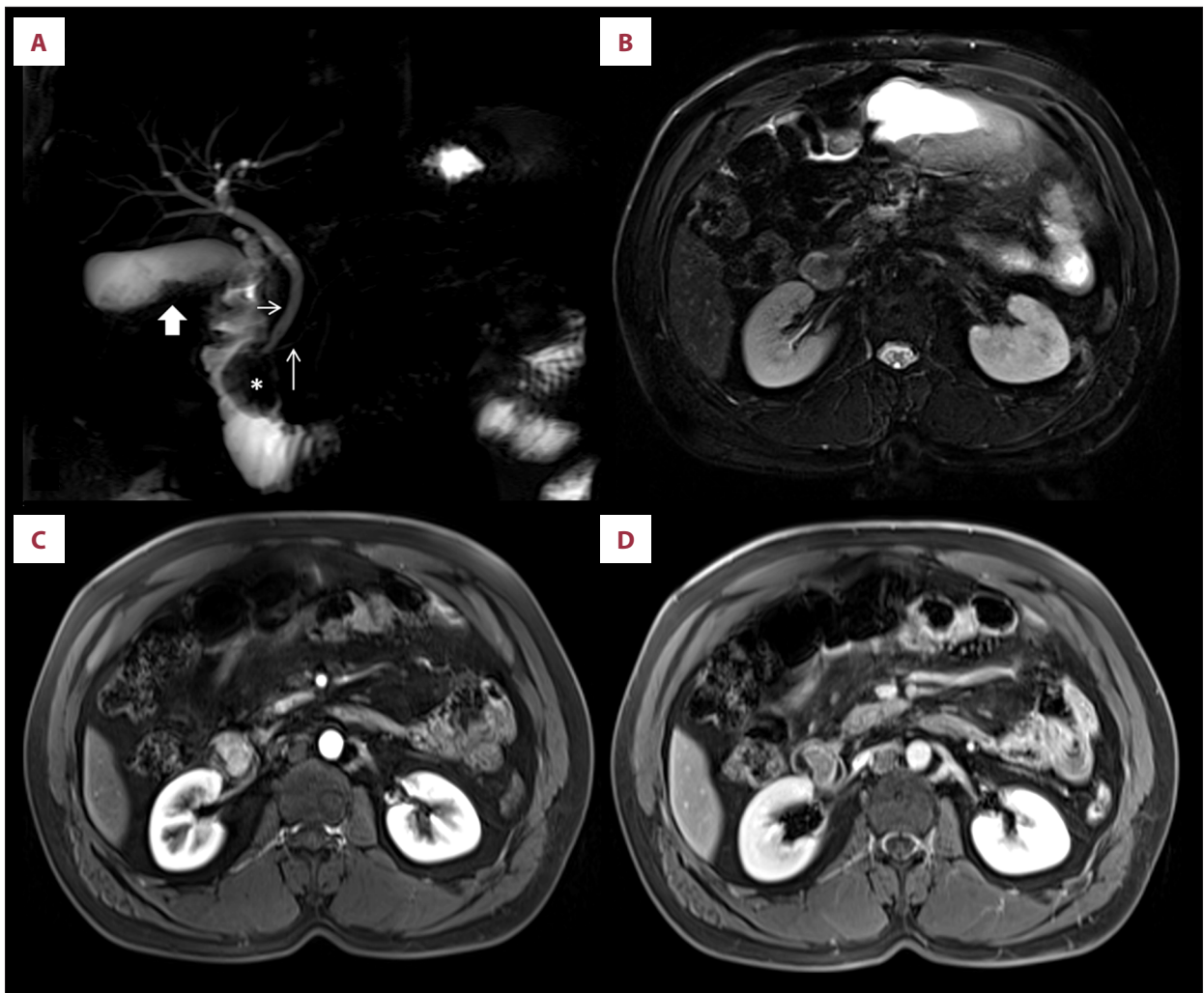


Figure 2. Magnetic resonance cholangiopancreatography (A) and selected axial magnetic resonance images (B-D) demonstrating an ampullary-based mass located within the lumen of the second part of the duodenum (*). The common bile duct (arrow) and the pancreatic duct (long arrow) are normal. The mass had a moderate signal on T2-weighted image (B). Enhancement of the mass in the arterial phase (C) and washout in the venous phase (D) are seen.

antibiotic therapy in the form of ciprofloxacin 500 mg twice a day and metronidazole 500 mg every 8 h. Surgical resection of the tumor was advised. However, the patient refused the operation despite the recommendation of the oncology team.

Discussion

We describe a case in which a man who presented with a clinical picture of acute cholecystitis was found to have gangliocytic paraganglioma of the duodenum. Gangliocytic paraganglioma has a variable clinical presentation. The most common presentation is gastrointestinal bleeding, which is observed in around half of the patients, and abdominal pain [2]. Jaundice is a relatively unusual presentation, seen in only 4.6% of all cases [2]. In the present case, the patient presented with right

upper quadrant pain with a positive Murphy sign giving an impression of acute cholecystitis.

The pathogenesis of gangliocytic paraganglioma remains unclear. However, it has been suggested that the tumor has an ectodermal origin and is derived from the neural crest cells found in the glands of Lieberkühn or in the celiac ganglia during fetal development. Alternatively, it has been proposed that the tumor has an endodermal origin found in the ventral primordium of the pancreas and neuroectodermal ganglion [4].

The gangliocytic paraganglioma tumor is virtually restricted to the duodenum. Few cases have been reported in other sites, including jejunum, esophagus, appendix, respiratory system, and the spinal cord [5].

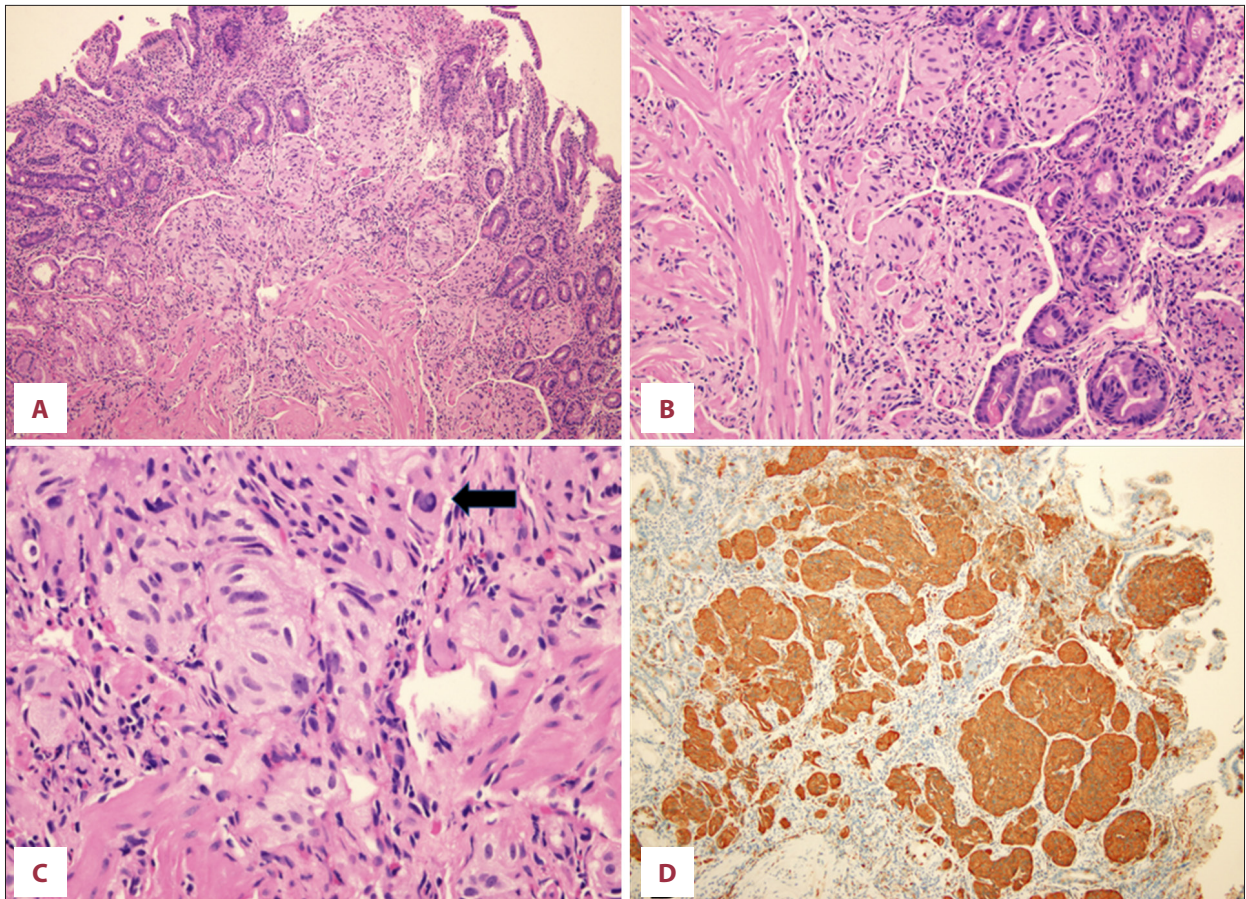


Figure 3. (A) The tumor centered in the submucosa of duodenum and extending to the mucosa resulting in ulceration (hematoxylin-eosin [HE] original magnification $\times 40$). (B) Nests and trabeculae of tumor cells infiltrating the mucosa (HE original magnification $\times 100$). (C) Epithelioid cells with elongated nuclei and amphophilic cytoplasm arranged in trabeculae. Scattered ganglion cells with prominent nucleoli and abundant eosinophilic cytoplasm (arrow) (HE original magnification $\times 200$). (D) Epithelioid cells depicting diffuse staining with synaptophysin (original magnification $\times 40$).

The pathological characteristics of gangliocytic paraganglioma involve 3 different cell types with different immunohistochemical profiles, including epithelioid, spindle-shaped, and ganglion-like cells. This tumor is often misdiagnosed as a grade 1 neuroendocrine tumor because of its low mitotic activity [6]. Gangliocytic paraganglioma is considered to have a benign behavior; however, the involvement of local lymph nodes and distant metastases have been reported [7]. In the present case, no enlarged lymph nodes were observed.

Endoscopic resection of the tumor is the treatment of choice. However, surgical resection is indicated if endoscopic management is not possible or when there is involvement of regional lymph nodes or distant metastasis [8].

Conclusions

Gangliocytic paraganglioma is a very rare tumor that may present with a clinical picture mimicking a biliary disease. Clinicians should have a high index of suspicion for duodenal lesions in patients presenting with obstructive jaundice with no evidence of biliary stones.

Conflict of Interests

None

Declaration of Figures Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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