

H. Pylori in a gastric schwannoma: a case report

Daniel S. Lavy¹, Ethan T. Paulin², Mitchell I. Parker³, Bin Zhang⁴, Glenn S. Parker¹, Mark R. Schwartz¹

¹Department of Surgery, Monmouth Medical Center, Long Branch, NJ, USA; ²St George's University, Grenada, West Indies; ³Monmouth University, West Long Branch, NJ, USA; ⁴Department of Pathology, Monmouth Medical Center, Long Branch, NJ, USA

Correspondence to: Daniel S. Lavy, MD. Department of Surgery, Monmouth Medical Center, 300 Second Ave, Long Branch, NJ 07740, USA. Email: danlavy@gmail.com.

Abstract: Schwannomas are benign, often asymptomatic, slow-growing tumors that originate from Schwann cells of the neural sheath. Although H. Pylori has been associated with gastric adenocarcinoma, there has never been a recorded association with schwannoma formation. We present a 64-year-old woman who underwent a laparoscopic partial wedge gastrectomy for an incidentally discovered gastric mass. Histologic examination was consistent with schwannoma; however, chronic inflammation with microorganisms morphologically consistent with H. Pylori was also present. This case suggests the first recorded case of H. Pylori in an immunohistochemically confirmed gastric schwannoma.

Keywords: Stomach; submucosal tumor; S100; spindle cell; GIST; vimentin; inflammation gastric mucosa

Submitted Mar 20, 2016. Accepted for publication Mar 28, 2016.

doi: 10.21037/atm.2016.03.55

View this article at: <http://dx.doi.org/10.21037/atm.2016.03.55>

Introduction

Schwannomas are benign, often asymptomatic slow growing tumors that originate from Schwann cells of the neural sheath. They represent approximately 4% of all benign gastric tumors. Although H. Pylori has been associated with gastric adenocarcinoma, there has never been a recorded association with schwannoma formation.

Case presentation

Patient LR is a 64-year-old female with several days of constant left lower quadrant crampy abdominal pain. Her past medical history was significant for hypertension and osteoporosis. Physical examination of the abdomen was consistent with acute diverticulitis, revealing marked suprapubic and left lower quadrant tenderness. She was evaluated via computed tomography (CT) for suspected acute sigmoid diverticulitis. The CT showed marked colonic thickening with surrounding inflammation of the sigmoid colon consistent with the presumed diagnosis. The study also revealed an incidental finding of a 3.5 cm × 3.5 cm soft tissue mass along the lesser curvature of the stomach.

The patient underwent a course of levaquin and flagyl for 10 days with complete resolution of diverticulitis. Four weeks later, the patient returned for an esophagogastroduodenoscopy (EGD) with endoscopic ultrasound (EUS) for further evaluation of the gastric lesion. EGD and EUS confirmed a hypoechoic lesion in the muscularis propria located approximately 7 cm distal to the gastroesophageal (GE) junction. Biopsy of the GE junction at that time showed squamous epithelium without intestinal metaplasia as well as cardiac mucosa with inflammation and cytologic atypia.

A laparoscopic partial wedge gastrectomy was performed two months after the EGD. An umbilical 12 mm Hassan port and two 5 mm ports in the left and right flanks were placed. Wedge resection of the mass was performed with three 60 mm blue load staplers. Evicel was placed on the staple line and reinforced with omentum.

Macroscopic examination of the resected stomach specimen revealed a well-circumscribed tumor, formed between the serosa and mucosa measuring 4.3 cm in its greatest dimension. Histology showed fundic-type gastric mucosa with acute and chronic inflammation and microorganisms morphologically consistent with H. Pylori. Underneath the mucosa, there was a spindle cell neoplasm

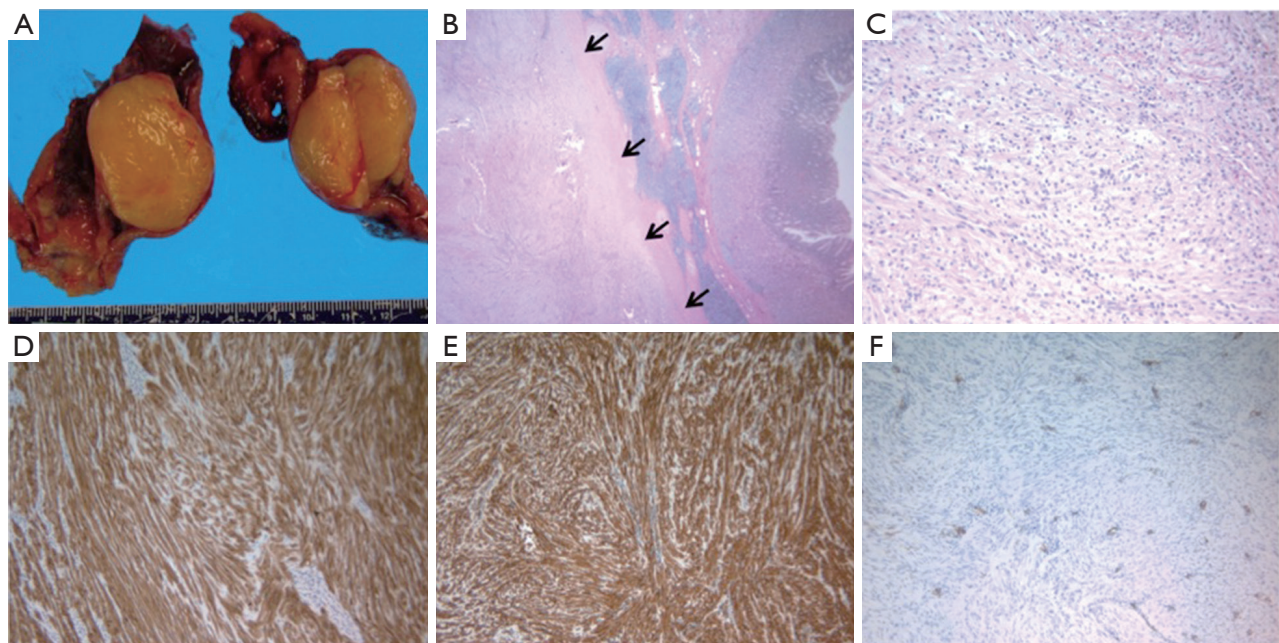


Figure 1 A gastric Schwannoma with concurrent gastric mucosa *Helicobacter pylori* infection. (A) The tumor is well-circumscribed, the cut surface reveals homogeneous yellow-tan appearance; the tumor is located within the muscularis propria. The tumor cells are consisted predominantly of slender-to-oval spindle cells, some with wavy nuclei, arranged in fascicles with associated lymphoid aggregates; (B) H&E, 20 \times ; arrows indicate the tumor border; (C) H&E, 200 \times . On immunohistochemistry stains, the tumor cells are strongly positive for S-100 (D), 100 \times ; vimentin (E), 100 \times ; and are focally positive for SMA (F), 100 \times , and desmin (data not shown). The spindle cells are negative for CD117, DOG-1, Melan A, HMB45, synaptophysin, ALK, CD34, CD56 and MCK (data not shown). Histology also shows fundic-type gastric mucosa with acute and chronic inflammation and micro-organisms morphologically consistent with *Helicobacter pylori* (data not shown).

which immunohistochemically stained positive for vimentin and S100 (*Figure 1*). The spindle cells were negative for CD117 (c-kit) and CD34 consistent with schwannoma. The postoperative hospital course was uncomplicated, and the patient was discharged on the 3rd postoperative day in stable condition.

Discussion

Schwannomas are benign slow growing neurogenic tumors that originate from Schwann cells in the neural sheath. They are commonly found in the central nervous system, spinal cord, or peripheral nerves of the body (1). Gastrointestinal schwannomas are a separate entity. Approximately 4% of all benign gastric neoplasms are schwannomas, and they comprise 0.2% of all gastric tumors. They are more common in females and occur most commonly in the 4th and 5th decades of life. These lesions typically present asymptotically and are discovered incidentally on

imaging, visualized on endoscopy or seen intraoperatively (2).

CT is the most commonly used noninvasive modality for identifying these types of tumors. On CT, a gastric schwannoma appears homogenous and lacks degenerative changes such as necrosis. This appearance helps serve to differentiate leiomyomas from leiomyosarcomas (1). MRI may also be important to define the exact location and the tumors invasion of surrounding organs and vessels (3). Additional testing may include EGD and EUS to help visualize tumor invasion. Typical endoscopic appearance of gastric schwannoma is a round protruding submucosal mass with overlying ulcerated mucosa (2).

The final diagnosis of schwannoma is ultimately based on the final pathologic specimen. Certain histological features are unique to gastrointestinal schwannomas. Typically they show immunohistochemical positivity for S-100 protein and vimentin. They are negative for C-kit, CD117, CD34, desmin and muscle specific actin. Positive desmin and muscle actin stains indicate leiomyoma, or leiomyosarcoma.

If positive for CD34 and CD117, this indicates GIST. Our specimen also tested positive for H. Pylori. To date, there are no case reports of documented H. Pylori found within a schwannoma specimen.

The treatment of choice for removing gastric schwannoma is either wedge resection or total resection. Patients have an excellent prognosis after surgical resection since malignant transformation of the lesion is rare (4).

Epidemiologic studies have shown that individuals infected with H. Pylori have an increased risk for gastric adenocarcinoma. Tu *et al.* suggested that long term presence of an inflammatory response may predispose gastric cells to malignant transformation. In the study, increased expression of a single cytokine (IL-1) in the stomach of transgenic mice may cause sporadic gastric inflammation resulting in cancer (5).

Although no causal relationship should be drawn by the discovery of H. Pylori of this specimen, this is the first recorded case of H. Pylori in an immunohistochemically confirmed gastric schwannoma. Future studies are needed to show if detection and treatment of H. Pylori may have implications in the prevention and subsequent transformation to gastric schwannoma.

Acknowledgements

None.

Cite this article as: Lavy DS, Paulin ET, Parker MI, Zhang B, Parker GS, Schwartz MR. H. Pylori in a gastric schwannoma: a case report. *Ann Transl Med* 2016;4(7):137. doi: 10.21037/atm.2016.03.55

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

References

1. Ji JS, Lu CY, Mao WB, et al. Gastric schwannoma: CT findings and clinicopathologic correlation. *Abdom Imaging* 2015;40:1164-9.
2. Alvarez JF, Ben-David K. Gastric schwannoma: a rare find. *J Gastrointest Surg* 2013;17:2179-81.
3. Yoon HY, Kim CB, Lee YH, et al. Gastric schwannoma. *Yonsei Med J* 2008;49:1052-4.
4. Froutan H, Shafaghi A, Hashemi M, et al. Gastric Schwannoma: A Case Report. *Medical Journal of the Islamic Republic of Iran* 2008;21:227-30.
5. Tu S, Bhagat G, Cui G, et al. Overexpression of interleukin-1beta induces gastric inflammation and cancer and mobilizes myeloid-derived suppressor cells in mice. *Cancer Cell* 2008;14:408-19.