Gastric schwannoma: An important differential for gastric submucosal tumors - A rare case report

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ABSTRACT

Schwannomas are slow-growing asymptomatic neoplasms that rarely occur in the gastrointestinal (GI) tract. It is a submucosal tumor arising in the neural plexus of the stomach. We herein describe the case of a 60-year-old male who presented with dull aching abdominal pain associated with nausea. While general examination appeared normal, imaging showed a well-defined isodense lesion in the anterior wall of stomach suggestive of leiomyoma. Upper GI endoscopy revealed a globular mass highly suspicious of gastric malignancy. Laparoscopic wedge resection was carried out. Very frequently misdiagnosed as gastrointestinal stromal tumors; hence, it is essential to differentiate schwannomas from mesenchymal tumors.

Key words: *Histopathology, Pathology, Stomach, Surgery, Tumors*

The gastrointestinal (GI) mesenchymal tumors are a group of tumors originating from the mesenchymal stem cells of the GI tract, consisting of gastrointestinal stromal tumors (GISTs), leiomyoma or leiomyosarcomas, or schwannomas [1]. Gastric schwannomas (GSs) are slow-growing asymptomatic neoplasm, which arise from the neural plexuses of Auerbach and Meissner [2]. Although these can occasionally occur in patients with von Recklinghausen's disease, schwannomas of the GI tract are exceedingly rare [2]. Benign schwannomas are mistaken on conventional pathological techniques as leiomyomas or leiomyosarcomas without immunohistochemical studies. Recently, it has been recognized that ultrastructural characteristics and immunohistochemical tests provide the most accurate diagnosis [2].

CASE REPORT

A 60-year-old male patient of Asian origin presented with chief complaints of dull aching progressive abdominal pain associated with nausea for the past 2 months, without any significant past and personal history. On examination, vital parameters were within normal limits, the abdomen was not tender, and no lump felt on palpation. On computed tomography (CT) scan, a well-defined isodense lesion of 3.1 cm×2.2 cm was found, arising from the anterior wall of the stomach without any enlarged lymph nodes. Upper GI endoscopy revealed a globular protruding submucosal mass of 4 cm×3 cm×3 cm in the anterior stomach wall (Fig. 1).

Gastric malignancy was highly suspected. Tumor markers CA 72-4, CA 19-9, and CEA were all within the standard limit. Endoscopic ultrasonography and biopsy were not done due to the limitation of it in our setup. Under general anesthesia in the Fowler position, with the surgeon standing between the patient's legs, a laparoscopic approach was achieved through five access ports, namely subxiphoid, right and left subcostal, left lateral, and supraumbilical. Conventional laparoscopic wedge resection with linear staplers was carried out.

Macroscopic examination of the stomach revealed a yellow-white, solid, and well-circumscribed tumor with a rubbery and jelly cut surface that measured 4 cm×3 cm×3 cm, located on the anterior wall of the stomach having exophytic character, beginning from the muscular layer without infiltrating the mucosa. In cross-section, whirling trabeculation was noticed. Microscopically, the tumor was composed of spindle cells forming sheets in a storiform pattern (Fig. 2). Immunohistochemically, the tumor was S-100 protein positive but CD 117 and CD 34 were negative (Fig. 3). The post-operative recovery was uneventful and no complaints at 1-month and 6-month follow-up.

DISCUSSION

GI autonomic nerve tumors are rare stromal tumors accounting for 0.1% of benign tumors of the GI tract [3]. Schwannomas belong to this group of tumors and were described for the 1st time by Herrera *et al.,* in 1984 [3]. The most frequent site includes the stomach followed by duodenum, jejunum, ileum, and colon. GS frequently occurs in female individuals in the fifth to eighth decades of life. They mainly occur in the gastric body, followed by gastric antrum and fundus and are usually solitary lesions arising from the lesser curvature of the stomach [4]. Schwannoma has an indolent and an exophytic growth pattern; hence, the

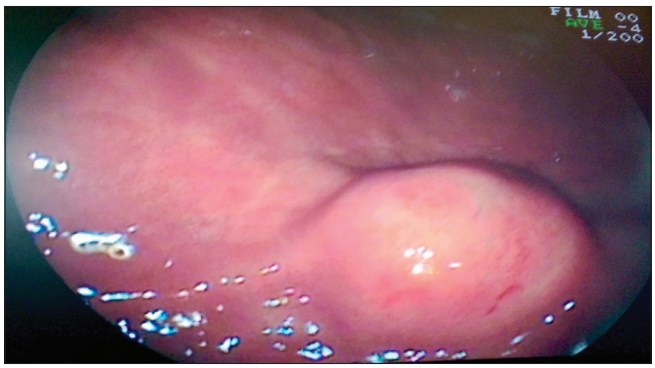

Figure 1: Gastrointestinal endoscopy revealed a globular protruding submucosal mass of 4 cm×3 cm×3 cm in the anterior stomach wall

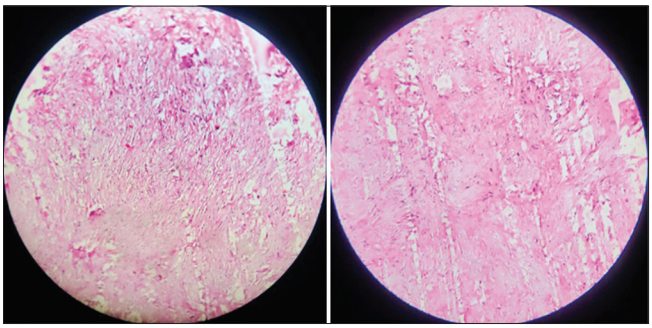

Figure 2: The section shows individual cells are spindle shaped with tapering ends and bland nuclear features with no prominent nucleoli (magnification ×10)

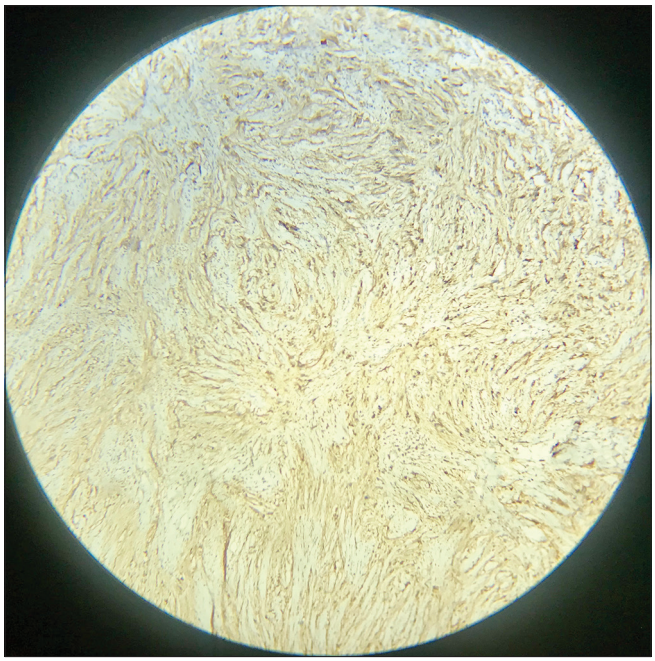

Figure 3: Immunohistochemically, the tumor is S-100 protein positive (magnification ×40)

majority of schwannoma are asymptomatic. However, the most common presenting symptom is upper GI bleeding and a palpable mass. Pre-operative imaging and endoscopic procedures are not completely specific since other mesenchymal tumors such as GIST may share the same features similar to GS [5].

Grossly GS are well-circumscribed, ovoid, or round mural masses of variable size, most commonly located in the muscularis propria. Microscopically, schwannomas of the GIT consist of spindle cells with a prominent lymphoid cuff and are characterized by the absence of Verocay bodies, Antoni A, and Antoni B areas [6]. On IHC sections, GSs are S-100 positive but are CD34 −ve, CD117 −ve, SMA –ve (contrast to leiomyoma which is SMA +ve), and desmin −ve; detection of these markers is widely considered to be the gold standard for diagnosis of GS [7]. GI schwannomas are GFAP positive and not encapsulated in contrast to peripheral schwannomas. These tumors lack NF2 mutations.

Laparoscopic exogastric wedge resection with negative margins and avoiding tumor rupture is the standard treatment for patients with gastric submucosal tumors. A post-operative stricture is a feared complication, especially if the tumor is present on the esophagogastric junction, pylorus, or lesser curvature. Tailored gastric resection helps to preserve more normal gastric tissue, facilitates safer, and more precise removal of gastric tumors which are difficult to approach with conventional exogastric wedge resection [8]. Recently, minimally invasive endoscopic surgical approaches have been actively used as a diagnostic aid and for therapeutic intervention in GS. However, it should be done with caution because schwannoma is mainly located deep in the muscular layer, which may lead to the full-thickness resection of gastric wall [9].

GSs are usually benign, and the patients have an excellent prognosis after curative resection; thus, frequent follow-up with CT imaging is not recommended [5]. However, careful monitoring is necessary for patients with a high index of suspicion of malignancy with higher mitotic rates (>10/50 HPF), a high degree of nuclear atypia with lower S-100 and higher Ki-67 expression after surgery. Few cases of malignant GS are present in the literature (4.5% of all reported GSs), in which recurrence and metastasis are 30% and 2%, respectively [10].

CONCLUSION

Due to its rarity, the index of suspicion for GS is low among clinicians. GS presentation may be more evident in facility with advanced medical imaging, and the limitation of it in the majority of government-run setups in country like ours makes precise differential diagnosis between GS and other gastric submucosal tumors difficult preoperatively and poses a challenge for every consultant. However, the specific positivity of S-100 protein in the presence of gastric cancer can help in making an early diagnosis.

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