

## Case Report

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# Gastric schwannoma presenting with upper abdominal pain: a rare case presentation

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## ABSTRACT

Schwannomas, also known as neurinomas or neurilemmomas, are tumors of spindle cells originating from any nerve that has a Schwann cell sheath. Mainly occur in the spinal cord and brain, the site contains more nerve in the limbs, neck, also more common. Schwannomas which occur in the digestive tract are rare, mainly in the stomach, followed by the small intestine, esophagus and colon are rare. Gastric schwannoma stomach neurogenic tumors accounted for 78% -82.4%, usually no obvious clinical symptoms onset, diagnosis mainly depends on immunohistochemistry.

**Keywords:** Gastric schwannoma, Gastrointestinal stromal tumors, Pathological characters, S-100 protein, Differential diagnosis

## INTRODUCTION

Schwannomas also known as neurinomas or neurilemmomas, it was first reported by the Daimaru in 1988, gastric schwannoma represented 0.2% of the schwannomas, most of them are slow-growing and benign, originating in any nerve that has a Schwann cell sheath.<sup>1</sup> Gastric schwannoma is usually considered from Auerbach's schwannoma, less from the submucosal plexus.<sup>2</sup> Mainly occur in the gastric body, followed by gastric, rarely occurs in the antrum, gastric schwannoma often constituted by the shuttle-type cells on histologica.<sup>3</sup> According to the latest research report, Gastric schwannomas often occur in individuals between the ages of 50 to 60 years old, and most of them are usually solitary lesions, arising from the lesser curvature of the stomach, low probability of occurrence in the digestive tract.<sup>4-6</sup> They are often asymptomatic or with mild abdominal discomfort discovered incidentally at laparotomy or radiographically.<sup>7</sup> They are always misdiagnosed as gastrointestinal stromal tumor because

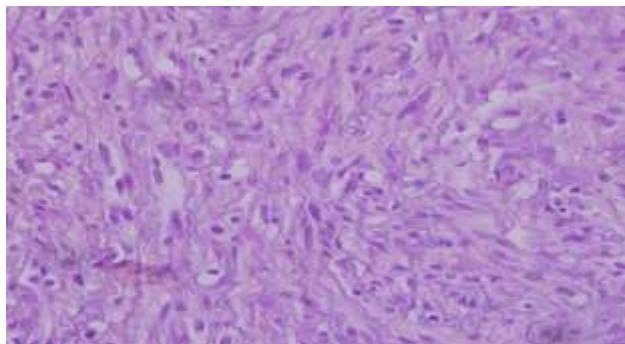
of its low incidence in clinical. Gastrointestinal endoscopy, sonography and computed tomography examination can help to locate the disease, determine the size of the lesion and the presence of metastasis to other organs. But it is difficult for its qualitative, diagnosed mainly by pathologic and immunohistochemistry. Most schwannomas have an excellent prognosis, so surgical resection is sufficient for treatment. Now we report a 57-year-old woman with gastric schwannoma, which was confirmed by pathologically and molecular test results after surgery.

## CASE REPORT

A 57-year-old woman with Abdominal pain discomfort goes to our hospital for an incidentally-detected abdominal mass detected by sonography, she felt upper abdominal pain with no obvious incentive one year ago, particularly more serious in the xiphoid, and she will feel obvious after eating cold food, without nausea, vomit, haematemesis and melena, no significant decline in body

weight. Gastrointestinal endoscopy display before admission: we can see a size of about 4x4cm mucosa uplift on the greater curvature of gastric body junction, and ulcers on the surface, covered with white fur, felt hard texture when touched it with the biopsy forceps, poor activity, a 0.4cm flat polypsit can be seen in the rear wall of it. Diagnosis of submucosal tumor of Gastric fundus.

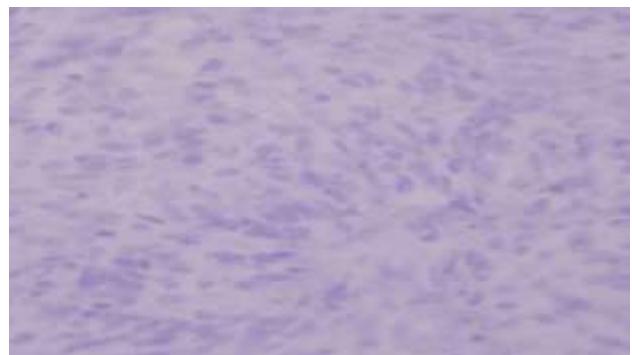
Physical examination revealed a palpated golf ball-sized mass in the epigastric area without tenderness or rebound tenderness. The patient's abdominal computed tomography examination shows a maximum section of about 3.9x3.4cm soft tissue density in greater curvature of the gastric body, growing inside and outside the chamber, visible punctate calcification can be seen in it, it is the passage of the mucous layer, a crater-like ulcers movies can be seen on the surface of the lesions visible, when making enhanced scan the lesion was persistent, progressive enhancement. Diagnosis of gastric antrum side occupying, considering malignant gastric stromal tumors possibility, we can see multiple low density lesions in the liver, considering liver cyst. Gallbladder, pancreas, spleen, kidneys and adrenal glands were shown normal. After four days of hospitalization, the patient underwent a gastric stromal tumor extended resection, during surgery we can see the tumor located in the gastric greater curvature, about the size of 5x5x3cm, hard texture, growing inside and outside the chamber, invading the serosal, and the growth of the cavity portion was fish-like, we can see ulcer in its central. Intraoperative rapid pathology showed spindle cell tumors, consistent with the diagnosis of gastrointestinal stromal tumors; during the surgery we committed a complete tumor resection.



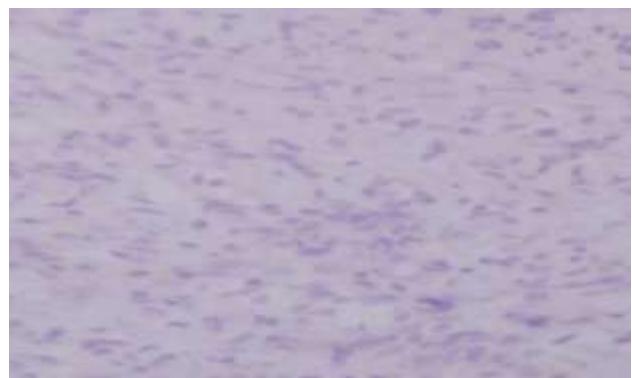
**Figure 1: (H&EX400) dense nuclei, fence-like structure with the cell nucleus are arranged perpendicular to the long axis, nerve sheath tumors plasma cells that make up the rich, light eosin, unclear boundary between cells, fusiform nucleus, two obtuse, similar size like smooth muscle cells.**

After surgery, the Microscopic examination of the resected and H&E-stained specimens showed a spindle cell neoplasm arranged in a palisade manner that was consistent with a schwannoma (Figure 1). Immunohistochemically, these tumor cells were positive

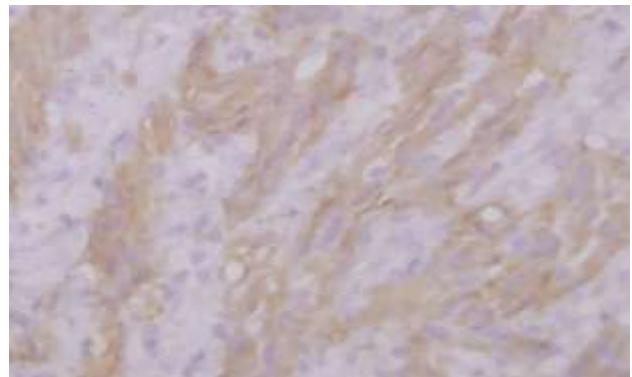
for S-100 protein (Figure 4) and negative for CD117 and Dog1 (Figure 2 and 3). These histopathological and immunohistochemical findings are consistent with a gastric malignant schwannoma.



**Figure 2: (CD117x400) negative for CD117.**



**Figure 3: (Dog1x400) negative for Dog1.**



**Figure 4: (S100x400) Immunochemistry stain shows the bundles of spindle cell with brown color, positive for S-100 protein.**

#### *According to molecular test results:*

The mutation of CKIT and PDGFRA genes were not detected (Table 1), we can see that these findings are consistent with a gastric malignant schwannoma. So we change surgery pathology confirmed gastrointestinal type rich cellular schwannoma, excluded the possibility of gastrointestinal stromal tumor.

**Table 1: Postoperative molecular test results.**

Gene name	Mutations	Test results	Site statistics
CKIT-9	Ala502-Tyr503 sector	No mutation	
CKIT-11	Lys550-Val560 sector	No mutation	
CKIT-13	654 Point Val>Ala	No mutation	
PDGFRA-12	V561D	No mutation	
		A>G mutation	
	D842V		
PDGFRA-18	D846V	No mutation	
	Y849C		
	A homozygous insertion		
	C>A heterozygous		

From the Table 1 above we can see that the mutation of CKIT and PDGFRA genes were not detected.

The patient felt good recovery after surgery, and after successful rehabilitation the patient left hospital, after surgery the pathology tests showed that schwannoma of the stomach at the bottom. Generally seen, the size of the stomach tumor that cut during surgery was about 4x4x3cm, there was some gastric attached to the top of it. Eight months after the surgery, she was well and without evidence of recurrent disease.

## DISCUSSION

Most gastric schwannomas are covered with normal mucosa, almost all located within the muscle,<sup>8</sup> some accompanied by submucosal invasion, most gastric schwannomas have clear boundary with other organizations around, no obvious symptoms onset. Tumor grows more slowly, and usually has no specific symptoms in the early time, when the tumor grows to a certain extent, it will cause gastric partial insufficiency, superficial necrosis occurs in tumor surface enlargement, then it will cause ulcers or erosions, it can occur in patients with chronic abdominal pain discomfort, clinical manifestations of gastrointestinal bleeding and abdominal mass, etc. It is much more difficult to diagnose gastric schwannoma, and it is always misdiagnosed as gastrointestinal stromal tumor. In ultrasound endoscopic gastrostomy schwannomas showed round or oval lumps, homogeneous, it originated in the muscularis propria, showing hypoechoic, hypoechoic masses edge halo. Its formation around the tumor may have lymphocytic infiltration.<sup>9</sup> At the same time there have been some reports in patients with gastric schwannoma underwent MRI, patients on T1-weighted images and low signal, T2-weighted images and high signal.<sup>10</sup> Gastric schwannomas rely mainly on pathological diagnosis, lymphocyte infiltration in the microscope, peripheral lymphocytes form and arrangement of fuzzy sets palisading nuclei showed, the main microscopic features of peripheral lymphocytes formed sleeve. The immunohistochemical

results show that tumor cells are strongly positive for S-100 protein, Vimetic and Actin, and negative for CD 117, CD34, Dog1, SMA and Desmin, the results support the diagnosis of schwannoma.<sup>6</sup>

Preoperative differential diagnosis of gastric submucosal tumors is generally difficult. Because of the low incidence of schwannomas and relatively limited number of cases previously reported, gastric schwannoma mainly differentiated from gastrointestinal stromal tumors and gastric leiomyoma in the clinical.<sup>11</sup> Gastrointestinal stromal tumor is a tumor derived from mesenchymal tissues, accounts for about 60%-70% clinical studies have shown that gastrointestinal stromal tumors mainly occur in the elderly, males more than females, it often occurs in the small intestine and stomach, and most of them often occur in the stomach.<sup>12</sup> Gastric stromal tumors accounted for 52%-60%, gastrointestinal stromal tumor on CT showed tumor growth both inside and outside the chamber, soft tissue masses with equal density of peripheral density. Most of the benign tumors are oval, have clear boundary. Malignant tumors have leaf obviously, but most of the boundary is not clear, part of the region and cystic necrosis may occur. Enhanced scan shows heterogeneous enhancement phenomenon. Most gastric schwannomas are benign, rarely malignant and distant metastasis, but the majority of gastrointestinal stromal tumors are malignant, prone to malignant transformation and metastasis. Gastric leiomyoma is rare in clinical, which is a benign lesion, longer course, and mostly are single, occur in the gastric body, followed by the antrum, soft texture and more growth to the cavity, mass smooth surface, it has no obvious difference with normal gastric mucosa.<sup>13,14</sup> The three tumors are very similar in clinical manifestations and disease sites, it is difficult to identify by imaging or endoscopy. At present, the differential diagnosis is performed mainly by pathological examination. Gastrointestinal stromal tumor pathology detected showed that tumor cells are strongly positive for CD117, Dog1 and CD34, and negative for S-100 protein, desmin, SMA and MSA. Gastric leiomyoma was showed that tumor cells are strongly positive for desmin, SMA and MSA, and negative for S-100 protein, CD117 and CD34.<sup>15</sup>

Gastric schwannomas are not sensitive to radiotherapy and chemotherapy, once the disease is diagnosed, regardless of benign or malignant, we should immediately underwent surgery and we can choose different surgical excision methods according to the clinical manifestation, the size of the lesion and the rapid pathological examination of the patients, we can choose local excision when the gastric schwannoma is benign, but when it is malignant, it should be more than 3cm from the edge of the lesion, half gastrectomy or partial gastrectomy, malignant or potentially malignant should be resection or radical gastrectomy of stomach.<sup>17</sup>

## CONCLUSION

The clinic course of gastric schwannomas are usually benign, slow growing, and asymptomatic. Gastric schwannomas are extremely rare, and only a few cases have been reported, it is difficult to diagnosis by clinical manifestation and radiological diagnosis. At present, the diagnosis is mainly depended on the pathological diagnosis, and the clinical treatment is mainly by surgical resection. However, further research is necessary to better understand features and postoperative prognosis of gastric schwannomas.

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