

Malignant Retroperitoneal Extra-Gastrointestinal Stromal Tumor: A Case Report

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Case Study

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ABSTRACT

Context: Extragastrointestinal stromal tumors (EGIST) are extremely uncommon neoplasm. To the best of our knowledge, only one retroperitoneal EGIST case has been reported in Oncolgy, in 2005 (PubMed search result).

Case Report: A 67-year old female patient presented with epigastric discomfort, dyspepsia, and anemia. Ultrasonographic examination of the abdomen showed the location of the tumor was between the tail of the pancreas and the spleen (retroperitoneal), it was variable in size of 12.3cm×7.2cm×14cm. Color Doppler Flow Imaging (CDFI) showed no flow signals with arterial-venous doppler spectrum in the masses. Contrast-enhanced computed tomography of the abdomen revealed a heterogeneously enhancing mass (8.23cm×14.2cm) and abundant blood supply of the tumor. The patient underwent gastroscopes-guided biopsy from the fundus of stomach for pathologic diagnosis and the result indicated chronic superficial gastritis. A complete gross excision was performed. Retroperitoneal tylectomy, left hepatic lobectomy, enterolysis, and liver biopsy were performed. Two weeks post operation, the patient was discharged without any postoperative problems. The final diagnosis of retroperitoneal EGIST was confirmed by histopathological examination and immunohistochemical findings (CD117 positivity).

Conclusion: We report a very rare case of retroperitoneal EGIST. Although the

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Ultrasonographic examination, computer tomography and endoscopy examination did not confirm the final diagnosis, they are complemented to each other in order to identify the exact location of the tumor. EGIST should be considered in the differential diagnosis of solid masses of abdomen on cytology and immunohistology.

Keywords: Extragastrintestinal stromal tumor; retroperitoneal; gastrointestinal stromal tumor.

1. INTRODUCTION

Gastrointestinal Stromal Tumor (GIST) is the most common mesenchymal tumor of the gastrointestinal tract, it actively express CD-117. Predilection sites of GIST are stomach (60~70%), small intestine (25~35%), large intestine and appendix (5%), esophagus (2~3%) and extra-gastrointestinal (<5%). The mesenchymal tumor in extra-gastrointestinal always occurs at a lower frequency in extra-gastrointestinal regions such as omentum, mesentery, retroperitoneum and undefined abdominal sites. This tumor is called Extragastrintestinal Stromal Tumor (EGIST) (Hong et al., 2010; Dubey et al., 2011; John et al., 2000).

A review of reported studies suggests that when diagnosing a GIST, other possible gastrointestinal tumor should be ruled out first, followed by the 3 GIST test procedures:

1. Computed tomography and endoscopy examination to prove solid tumor;
2. pathology study should show the cytological feature of spindle cell and epithelioid cells;
3. CD117 immunologically competent test should be positive (Corless et al., 2002). The latter one is always considered as the gold standard.

There has not been significant reporting of EGIST cases in China. Here we present a case study of EGIST to describe the clinical characters of this patient clinically diagnosed with malignant retroperitoneal EGIST, to provide theoretical evidence for diagnosis.

2. CASE PRESENTATION

A 67-year old female patient came to the gastroenterology department with a primary complaint of epigastric discomfort, dyspepsia, and anemia. No lump was palpable in the abdominal examination. Routine laboratory investigations were within normal limits except for mild anemia. The patient did not have neurofibromatosis, and stated no family history of mesenchymal tumors of the gastrointestinal organs.

Ultrasonographic examination of the abdomen showed a solid mass with clear margin located between the tail of the pancreas and spleen in the left upper abdomen. The masses were variable in size of 12.3cm×7.2cm×14cm, smooth coating and internal heterogeneous echo. The masses showed a size of about 7.5cm × 4.2cm anechoic area with good echolucent (Figure 1).

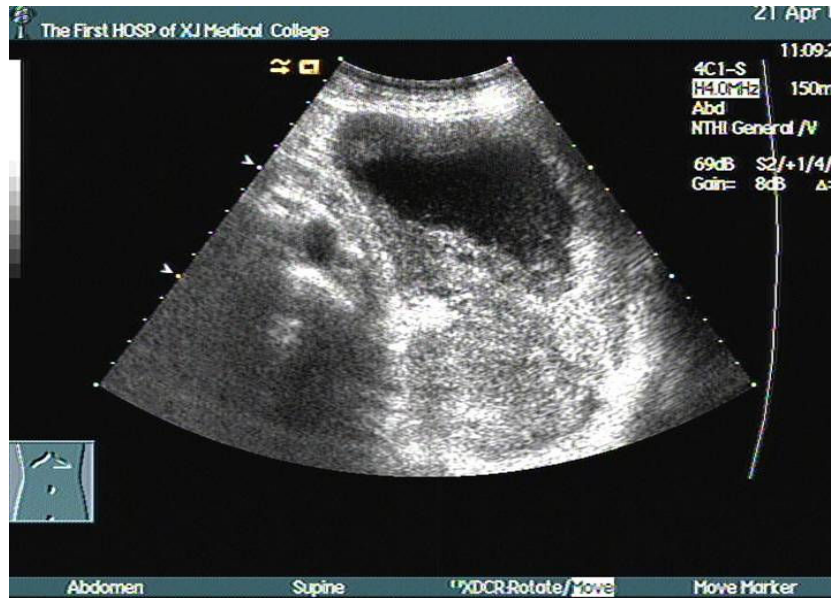


Figure 1. Abdominal ultrasonography revealed large multiple, round, heterogeneous, hypoechoic masses

Color Doppler Flow Imaging (CDFI) showed a few short stick shaped flow signals around the border of the masses. But no flow signals with arterial-venous doppler spectrum were detected in the masses. The pancreatic tail was not clearly shown because of the oppression of the masses (Figure 2). Initial consideration was that the tumor originated in the pancreas.

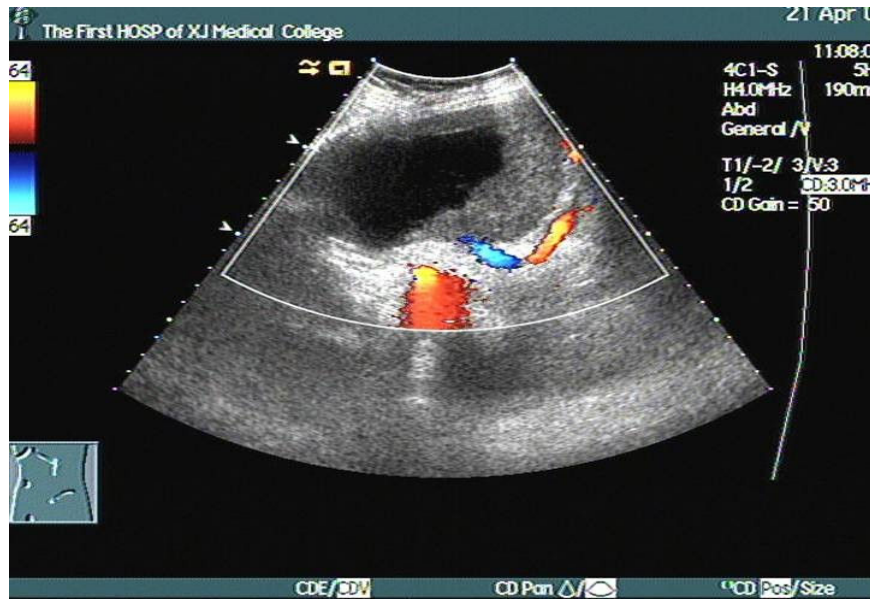


Figure 2. Color doppler flows imaging of abdomen mass

Computed tomography showed a large irregular mass located in the left upper abdominal cavity; the maximum size of individual tumors was 8.23cm×14.2cm. The adjacent left liver lobe and the spleen were pushed aside because of the mass. The border of the mass and the gastric wall was ill defined. Gastric cavity was compressed, too. The centre of the mass is low density fluid (Figure 3).

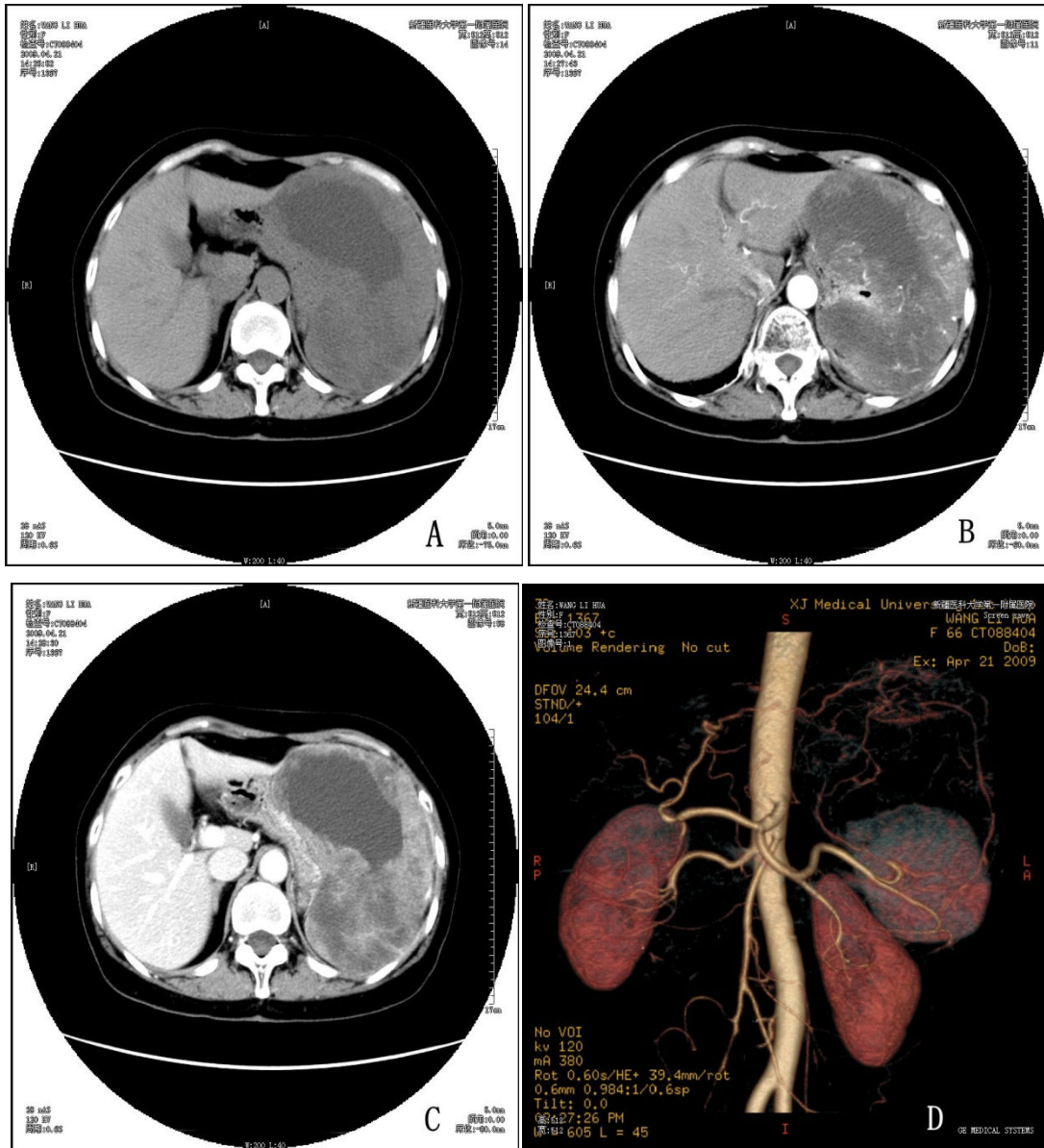


Figure 3. Contrast-enhanced computed tomography showing an intraperitoneal mass with no relationship to the gastrointestinal tract.

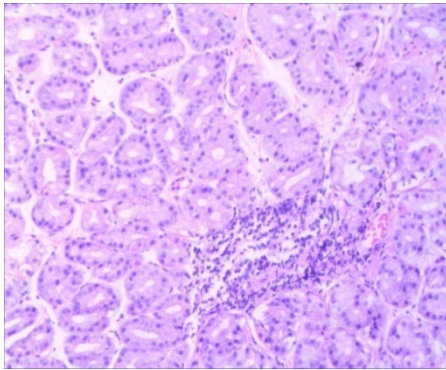
A: plain scan, B: enhancement scan of arterial phase, C: enhancement scan of venous phase, D: CT angiography, CTA)

An enhanced computed tomography of the abdomen revealed a heterogeneously enhancing mass in the subsequent arterial phase, and continuously enhancing in the venous phase. High probability of gastrointestinal stromal tumor was considered. Contrast-enhanced computed tomography showed abundant blood supply to the tumor (Figure 3).

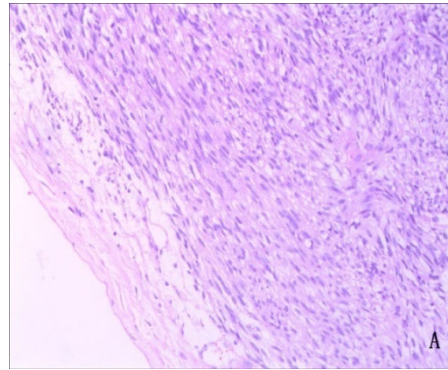
Computed tomography scanogram clearly showed the border of the tail of the pancreas which was not clear on ultrasonographic examination of the abdomen. According to this CT scan the consideration of pancreatic tumor was excluded (Figure 3).

The patient underwent gastroscopes-guided biopsy from the fundus of stomach for pathologic diagnosis and the result indicated chronic superficial gastritis.

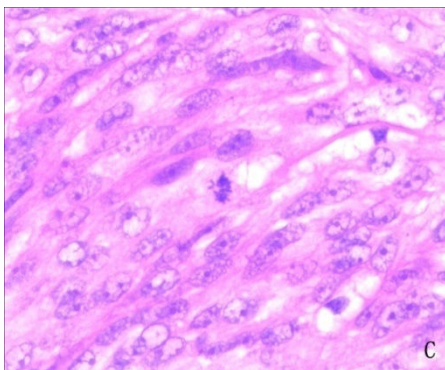
A complete gross excision was performed. Retroperitoneal tyelectomy, left hepatic lobectomy, enterolysis, and liver biopsy were performed. Two weeks after operation, the patient was discharged without any post operative problems and she was treated with anti-inflammatory therapy. After tumor resection, the patient was regularly followed up after post-discharge.



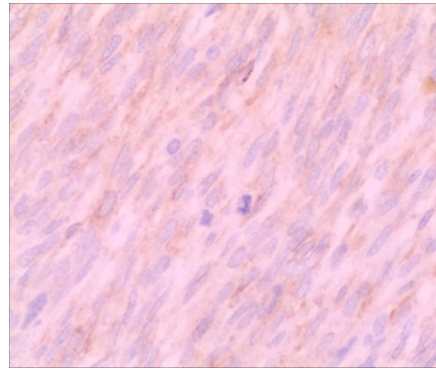
A: Lymphocyte infiltration in gastric mucosa showed chronic superficial gastritis (×200).



B: The tumor was composed of spindle cells on histologic findings (x 100).



C: EGIST of high cellularity with degenerative nuclear atypia, prominent nucleoli and multinucleation (×400).



D: Hepatic metastasis (CD 117 positive) (×400).

Figure 4. Immunohistological examination results of the case

Grossly, the size of the retroperitoneal mass was 18cm×14cm×8cm. Sections from the mass sent for fast pathologic diagnosis suggested higher risk of extra-gastrointestinal stromal tumor. Histopathological examination revealed high density of tumor cells; brisk mitoses (more than 10/50 HPF) were also seen. Marked nuclear atypism, hemorrhage, and necrosis supported the high risk nature of this tumor. A 5.0cm×2.5cm×2.0cm sample of gastric wall tissue was sent for histopathological examination, no tumor cells were found. A 3.0cm×3.0cm×0.5cm sample of left liver lobe tissue was also sent for histopathological diagnosis, immunohistochemical results showed CD 117 positive. Tumor cells were found in the extra-capsular part. This result confirmed the diagnosis of EGIST and showed liver metastasis of the tumor (Figure 4).

3. DISCUSSION

Extra-gastrointestinal stromal tumors are very rare neoplastic lesions. They account for less than 10% of the stromal tumors. Reith et al. studied 48 cases of EGIST, and reported that most EGIST tumors arose within the abdominal cavity, where they involved the omentum or mesentery [3]. Retroperitoneal EGISTs are more rare than intra-abdominal EGISTs. There are reports of an EGIST occurring in the Vulval (Chou et al., 2010), scrotal (Kang et al., 2007), vulvovaginal/rectovaginal (Maggie et al., 2006), pancreas (Vij et al., 2011). Another study discussed EGIST arising above the diaphragm (Kevin et al., 2010). Primary localization between the pancreas tail and spleen (retroperitoneal) has rarely been reported. Nakagawa M et al (Nakagawa et al., 2005) hypothesized EGIST and GIST would develop from CICs and the smooth muscle, while Agaimy and Wunsch considers EGIST originates from a mural GIST with massive extramural growth, which finally results in loss of attachment to the intestinal wall (Agaimy et al., 2006; Barros et al., 2011).

The symptoms of GIST include abdominal pain, abdominal mass, anorexia, early satiety, flatulence, obstructive jaundice, bleeding, anemia, and weight loss. In our case, this patient has epigastric discomfort, dyspepsia, and mild anemia.

Iconography examination is the preliminary diagnosis method for GIST, which includes computed tomography, endoscope, and positron emission computerized tomography, etc. Here we carried out ultrasonographic examination of the abdomen to prove the solid mass, the location of the mass and the size of it (12.3cm×7.2cm×14cm). Color doppler flow imaging shows the blood supply to the mass. In our case, color doppler flow imaging revealed no flow signals with arterial-venous doppler spectrum in the masses. An enhanced computed tomography of the abdomen confirmed the solid mass and the probable high risk of malignant GIST. Contrast-enhanced computed tomography showed abundant blood supply to the tumor. These are all good variable examination for prediagnosis of GIST. The pancreatic tail was not clearly shown on ultrasonographic examination of the abdomen (Figure 2), therefore pancreatic tumor was initially considered. But computed tomography scanogram clearly showed the border of the tail of the pancreas which was not clear on ultrasonographic examination of the abdomen. According to this CT scan the diagnosis of pancreatic tumor was excluded.

Histologic evaluation, immunohistochemical analysis, sequencing of KIT mutation are important for GIST diagnosis. Histology of GIST should be spindle cell type (70%), epithelial cell type (20%), and mixed cell type (rare); cell nests consisted of spindle cells and groups of filamentous fibers are the most distinctive morphous change of GIST. High cell density, multiplicity karyomorphism, brisk mitoses, encroachment of blood vessels are suggested

malignant features of the tumor. In our case, histologic evaluation indicated spindle cell type, high density of tumor cells, and brisk mitoses (more than 10/50 HPF). The result strongly suggested malignant tumor. Therefore this tumor belongs in the high risk category.

Immunohistochemical analysis plays a key role in the final diagnosis of GIST. GIST is now diagnosed by specific marker c-kit and CD34, irrespective of the site of origin. GISTs have features similar to interstitial cells of Cajals and consistently express KIT (CD117). Since most of the GIST cases (95~98%) expresses c-kit in spite of the size, location and features of the tumor, diagnosis can be either benign or malignant (Corless et al., 2002). In our case we test c-kit. The result showed CD117 positively expressed. Yamamoto and Maggie et al, (Maggie M. Lam, et al., 2006) recently reported EGISTs of the 'abdominal cavity' that had exon 9 and exon11 mutations. Diagnosis can also be confirmed at the molecular level by the presence of KIT gene mutations (Jong-Han et al., 2007). In our case, sequencing was not carried out.

For the treatment of GIST, surgical ablation of the primary lesion is preferred; the key point is to completely excise the lesions. If there is hepatic metastasis, excising the metastasis could prolong the patient's life span. In our case, since the tumor size was considered large, (18cm×14cm×8cm) and there was adhesion among the organs, retroperitoneal tyelectomy, left hepatic lobectomy, enterolysis were performed. Liver biopsy was done in order to confirm the metastasis of the tumor. The prognosis of GIST is not optimistic. Even with surgical ablation, there is a 85% recurrence and metastasis. Five-year survival rate is lower than 35%. In our case, retroperitoneal tyelectomy, left hepatic lobectomy, enterolysis, and liver biopsy were performed. Two weeks post operation, the patient was discharged without any post-operative problems. The patient was regularly followed up after post-discharge for more than two and a half years.

Since immunohistochemical analysis of CD117 positive was identified for final diagnosis in 2002 (Fletcher et al., 2002), the diagnosis of GIST has become much more challenging. Early diagnosis before operation through the techniques of medical imageology and molecular biology, consideration of independent factors of GIST for prognosis and the effective clinical therapies was expected. Unfortunately, there is not enough case study and epidemiological study of GIST in China. The incidence of GIST, and biologic behavior, and the etiology still need to be explored deeply.

We concluded that cases of extra-gastrointestinal stromal tumors were rare. In this case, the tumor was located between the tail of pancreas and the spleen (retroperitoneal). During the process for final diagnosis, we found that although the ultrasonographic examination, computer tomography and endoscopy examination did not lead to a definitive the final diagnosis, they were complementary to each other in identifying the exact location of the tumor. EGIST should be considered in the differential diagnosis of solid masses of abdomen on cytology and immunohistochemistry.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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