Case Report

Small Intestinal Gastrointestinal Stromal Tumor Mimicking a Gynecologic Tumor Diagnosed via Laparoscopic Examination: A Case Report

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Abstract: Gastrointestinal stromal tumors（GISTs）are rare mesenchymal tumors that develop in the gastrointestinal tract. We describe the case of a 46-year-old woman with a pelvic soft tissue mass diagnosed as a small intestinal GIST mimicking a gynecologic tumor diagnosed on laparoscopic examination. We performed a laparoscopic examination based on suspicion of a gynecologic tumor, including malignancy for differential diagnosis. Laparoscopic examination revealed a solid tumor of 7 cm in diameter occupying the lesser pelvis; the tumor was attached to the small intestine. Since the tumor originated from the small intestine, we performed a resection of the tumor and part of the intestine. Tumor rupture was not observed during the operation. Based on the histopathological and immunohistochemical findings, we diagnosed the tumor as a GIST originating from the small intestine. With classification into the moderate risk group, imatinib treatment was initiated. Two years after the operation, the patient is doing well with no recurrence.

Key Words: Gastrointestinal Tumor, Gynecologic Tumor, Laparoscopic Examination.

Introduction

Gastrointestinal stromal tumors（GISTs）are rare tumors. With an incidence rate of 1 per 100,000, they are the most frequent mesenchymal tumor of the gastrointestinal tract. The stomach is the most common development site（60-70%）, followed by the small intestine（30%）. Since there are no radiological image findings characteristic of GIST, preoperative imaging-based diagnosis is

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considered to be virtually impossible[1]. The diagnosis of GIST is based on histology and immunohistochemistry. Additionally, very rarely do GISTs present as pelvic masses[2], making it difficult for clinicians to diagnose them preoperatively. Herein, we report a case of small intestinal GIST localized to the pelvis, diagnosed by laparoscopic examination, and resected via laparoscopic surgery.

Case Presentation

A 46-year-old woman was referred to our institution with a complaint of abdominal pain. She had a surgical history for a right ovarian tumor, however the details were unknown. Transvaginal ultrasonography revealed a solid pelvic tumor of 7 cm in diameter on the right side of the uterus. On magnetic resonance imaging (MRI), the tumor occupied the lesser pelvis showing diffuse low to intermediate signal intensity, and partially high signal intensity on both T1 and T2-weighted images (Fig. 1). Based on these findings, we suspected a fibroma or sex-cord stromal tumor of the right ovary or a sub-serosal leiomyoma of the uterus with degeneration or hemorrhage, however a malignant tumor could not be ruled out.

Laparoscopic examination showed that the solid tumor occupied the lesser pelvis and the tumor was connected to the small intestine. The uterus and both adnexae had no abnormal findings. We found that the tumor originated from the small intestine and performed a resection of the tumor and part of the intestine. The tumor was extracted from the wound of the umbilicus after extension to 10 cm. Histopathological examination revealed that the tumor comprised a cellular proliferation of spindle cells with eosinophilic cytoplasm arranged in an interlacing bundle pattern (Fig. 2). Immunohistochemical examination showed positive findings for CD34 and KIT, leading to the diagnosis of GIST (Fig. 3). The mitotic count was $\leq$ 5/50 high-power field, and classified to the moderate risk group according to Miettinen's method of risk classification[3]. Imatinib was introduced at a dose of 400 mg daily. Two years after the surgery, the patient is doing well with no recurrence.

Discussion

GISTs are mesenchymal tumors that develop anywhere in the tubular gastrointestinal tract. A majority of GISTs are composed of cellular proliferation of spindle cells with eosinophilic cytoplasms. Due to their morphological features, GISTs need to be occasionally differentiated from leiomyoma or leiomyosarcoma[4]. A definitive diagnosis is made based on the positive immunohistochemical results for KIT and/or CD34[4]. GISTs can be easily identified on ultrasound, computed tomography scan, or MRI, however there are no image findings characteristic of GIST[1]. Due to the unspecific image findings, a GIST localized to the pelvis preoperatively could be misdiagnosed as a gynecologic tumor[1)2)5-8]. Although GISTs rarely localize to the pelvis, they should be borne in mind as a differential diagnosis when pelvic masses show unspecific image findings.

Regarding the surgical treatment of GISTs, several retrospective studies have reported that laparoscopic surgery has the same or better short-term results (amount of bleeding, complications, hospitalization period, prognosis, etc.) compared to open surgery[9-11]. The National Comprehensive Cancer Network updated its recommendation that laparoscopic surgery is acceptable for GISTs up to 5 cm in diameter[12]. A few studies comparing laparoscopic surgery with open surgery in small intestinal GISTs reported results similar to those of gastric GISTs[13]. Ihn et al. reported that

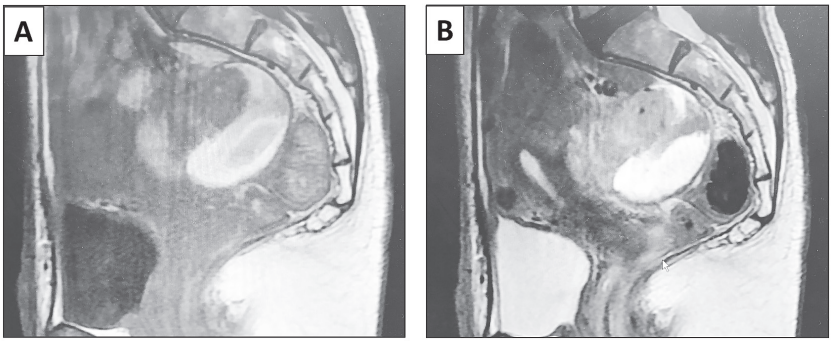

Fig. 1. MRI findings show diffuse low to intermediate signal intensity, and partially high signal intensity on T1 and T2-weighted images (A: T1-weighted, B: T2-weighted).

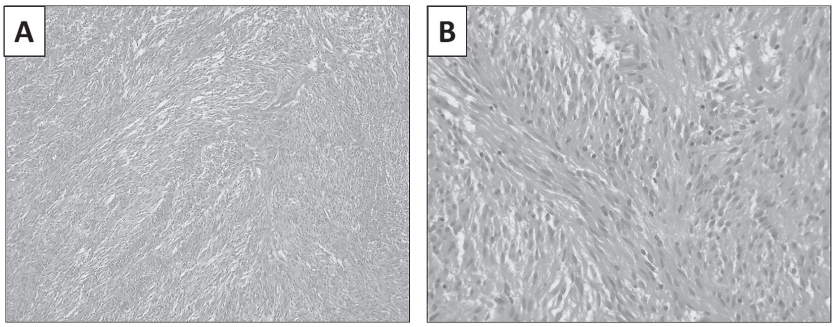

Fig. 2. Morphologic findings (hematoxylin and eosin staining). The tumor was composed of cellular proliferation of spindle cells with eosinophilic cytoplasms arranged in an interlacing bundle pattern (A: low power field, B: high power field).

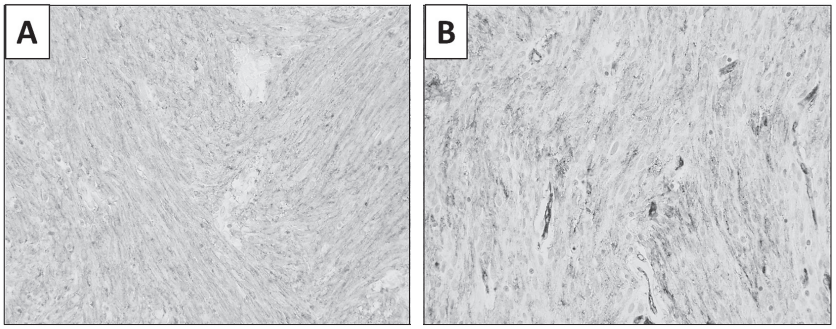

Fig. 3. Immunohistochemical examination findings. (A) Positive immunostaining findings for CD34. (B) Positive immunostaining findings for KIT.

laparoscopic surgery for small intestinal GISTs less than 10 cm in diameter has favorable short-term postoperative outcomes compared with open surgery[13-15]. In this case, the tumor originated in the small intestine and had a diameter of 7 cm, the surgery was completed with no complications, and there was no recurrence for 18 months after surgery.

GISTs occasionally have a partially cystic or hemorrhagic component; there is, therefore, a need

to exclude epithelial carcinoma[1)2)5-8)]. Laparoscopic surgery for an ovarian tumor suspected to be malignant, presenting with specific symptoms, is still controversial. Abu-Rustum et al. reported that pneumoperitoneum did not affect the overall survival of patients with metastatic intra-abdominal carcinoma[16)]. Zivanovic et al. reported that the rate of port-site tumor implantation after laparoscopic surgery is low, and was mostly accompanied by other intraabdominal or distant metastases[17)]. In any case, laparoscopic surgery for patients with disseminated lesions should be performed with caution. In this case, there were no preoperative findings suggesting the presence of other disseminated or metastatic lesions, and we decided to perform a laparoscopic examination and decide the procedure based on the intraoperative findings.

We experienced the case of a pelvic tumor that was difficult to diagnose pre-operatively, and performed laparoscopic examination and resection, leading to the diagnosis of a small intestinal GIST and favorable short-term outcome. When faced with a soft-tissue tumor with nonspecific pelvic imaging findings, a diagnosis of GIST needs to be considered. We also considered laparoscopic examination to be useful for pelvic tumors which are difficult to diagnose preoperatively.

Ethical considerations

The patient provided informed consent for publication of this case report. The study protocol was also approved by the appropriate ethics review board.

Conflicts of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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〈和文抄録〉

婦人科腫瘍を疑われるも審査腹腔鏡で小腸消化管間質腫瘍と診断し得た症例

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消化管間質腫瘍（GISTs）は消化管で発生する稀な間葉系腫瘍である．婦人科腫瘍が疑われた骨盤腫瘍を審査腹腔鏡で小腸腫瘍と診断し，摘出し得た小腸 GIST の症例を経験したので報告する．症例は 46 歳女性．悪性腫瘍を否定できない婦人科腫瘍の術前診断で，審査腹腔鏡を施行した．術中所見で小骨盤を占拠する 7 cm ほどの固形腫瘍を認めた．子宮および付属器を含む骨盤臓器との癒着は認めず，小腸との連続性から小腸発生の腫瘍と診断し，小腸と腫瘍の合併切除を行なった . 術中に被膜破綻は認めなかった．免疫組織学的診断で CD34 および KIT 陽性であり，小腸発生の GIST と診断した．術後は再発中リスク群に分類され，イマチニブ投与を開始した．現在術後 2 年が経過しているが，明らかな再発所見は認めていない．

キーワード：消化管間質腫瘍，婦人科腫瘍，審査腹腔鏡．