Gastric Stromal Tumor with CD34 Immunoreactivity
— A Case Report —

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Summary: Gastric stromal tumors are the most common mesenchymal tumors, and such submucosal mass lesions of the upper gastrointestinal tract occur frequently. A 54-year-old woman with no major complaint was admitted to our hospital for evaluation of a mass located between the stomach and the pancreas. Abdominal ultrasonography, computed tomography and endoscopic ultrasonography demonstrated a mass lesion which was located near the lesser curvature of the stomach. Selective left gastric arterial angiography revealed a hypervascular mass, and we diagnosed it as a leiomyosarcoma of the stomach. At laparotomy, there was a large solid mass 5 cm in diameter along the minor curvature of the stomach. Tumor resection with partial gastrectomy was performed, and the histological diagnosis was a gastric stromal tumor with CD34 immunoreactivity. We report a case of stromal tumor of the stomach with extramural growth and review the literature.

Key words: stromal tumor, stomach, GIST, CD34

INTRODUCTION

Gastrointestinal stromal tumors (GIST) constitute an ill-defined group of lesions arising from the muscle wall of the gastrointestinal tract. With the increased use of ultrasonographical, radiological and endoscopic techniques, these tumors are being discovered more often, and there is debate concerning the appropriate evaluation of them. Originally recognized in 1960 by Martin et al. [1] as a distinctive type of stromal neoplasm of the bowel, they were subsequently reported by Stout [2], who introduced the term leiomyoblastoma and interpreted them as a bizarre variant of smooth-muscle tumor. With the advent of modern immunohistochemical techniques, it has become increasingly apparent that the histogenesis and realized lines of differentiation of these tumors are more complex than previously recognized.

CASE REPORT

A 54-year-old woman was referred to our hospital for evaluation of an abdominal mass which had been detected by abdominal computed tomography (CT). She complained of no symptoms such as abdominal pain, nausea, anorexia, or weight loss. Laboratory examination revealed no abnormal findings on admission.

Upper gastrointestinal barium examination revealed a 5 cm submucosal mass along the lesser curvature of the stomach. Abdominal CT revealed a tumor localized at the lesser curvature of the stomach (Fig. 1a). Selective angiography showed a tumor stain feeding from the left gastric artery (Fig. 1b). Preoperative diagnosis was leiomyosarcoma of the stomach with extragastric protrusion growth. The location of the lesion was visualized at laparotomy, and the tumor was observed to be 5 cm from the lesser curvature of the gastric wall without invasion to the pancreatic body. The tumor resection was per-
The resected specimen consisted of a solid tumor measuring 51×55 mm (Fig. 2a). Microscopically, the tumor cells consisted of a proliferation of spindle cells showing a leiomyoma-like pattern. There was no increase in the cellularity of this tumor and the mitotic rate was low (Fig. 2b). Immunohistochemical staining of the resected specimen was positive for CD34 (the hematopoietic progenitor cell antigen), but was negative for SMA (smooth muscle antigen), HHF-35 (muscle-specific actin) and S-100 protein. Histological examination showed a stromal tumor which was classified as uncommitted type.

**DISCUSSION**

The term gastric stromal tumor has been applied to mesenchymal tumors that represent neither typical leiomyomas nor schwannomas. The pathologic evaluation of gastric stromal tumors is difficult and controversial. The controversy over the histogenesis of stromal tumors has been based on immunohistochemical studies using S-100 protein [3], desmin, vimentin, and HHF-35 [4,5]. Some reported cases have been S-100 positive and are thought to be derived from Schwann cells [6].

The vimentin is a marker of mesenchymal dif-

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**Fig. 1.** a: Abdominal CT reveals a low density mass which is located beside the lesser curvature of the stomach. b: Selected angiography of the left gastric artery shows the tumor stain.

**Fig. 2.** a: Cut surface of the resected specimen shows an extraluminal growth, and necrotic or hemorrhagic area. b: Histological view shows interlacing spindle shaped cells without high cellularity and apparent mitosis. (H & E, ×100)
differentiation and HHF-35 recognizes a common epitope of all the muscle actins, whereas anti SMA recognizes α-smooth muscle actin. However, neither HHF-35 nor anti-SMA are specific markers for smooth muscle cells, as they also stain myoepithelial cells, pericytes, and myofibroblasts.

According to Ueyama et al. [5], the GIST could be divided into four groups according to their immunoreactivity for desmin or HHF-35: Group 1 -diffusely positive reaction for desmin; Group 2 -focally positive reaction for desmin; Group 3 -negative reaction for desmin, but positive reaction for HHF-35; and Group 4 -negative for both desmin and HHF-35. The average size of the tumors in Group 1 and 2 was smaller than that of the tumors in Group 3 and 4. Malignant tumors were present more often in Group 3 and 4 than in Group 2. Tumors with the histologic features of an ordinary leiomyoma were included in Group 1. Group 2 was mainly composed of benign spindle and epitheloid tumors that were focally reactive to desmin. A positive reaction for vimentin was preserved in all cases of Group 3. Many of the malignant tumors were included in this group. An undifferentiated or primitive mesenchymal nature was suggested for tumors in Group 4. Although our immunohistochemical study did not include desmin or vimentin, our patient seemed to belong to Group 2 according to the criteria of cellularity and size. Rosai [7] also reported that the stromal tumors were divided into four types immunohistochemically; 1) smooth muscle type, 2) neural type, 3) combined smooth muscle-neural type, 4) uncommitted type. According to this classification, our patient was type 4, uncommitted type.

In 1995, Miettinen et al. [6] reported about value of CD34 antigen in GIST’s identification and separation from true leiomyomas and schwannomas. CD34 is a hematopoietic progenitor cell antigen expressed in endothelial cells and some other mesenchymal cells [8,9]. Most GIST that did not show phenotypic properties of muscle cells or Schwann cells were strikingly positive for CD34. CD34 reactivity is a distinctive feature that separates the group of GIST from both typical gastrointestinal leiomyomas and schwannomas that are consistently CD34 negative.

According to Hirota et al. [10], GISTs may originate from the interstitial cells of Cajal (ICCs) because the development of ICCs is dependent on the stem cell factor and a proto-oncogenic receptor tyrosine kinase (KIT) interaction, and because, like GISTs, these cells express both KIT and CD34. Therefore, the positive finding for both KIT and CD34 in the tumor cells is a very useful marker as a diagnosis of GIST. In Japan, there were only 6 reported cases with CD34 immunoreactivity, and they seemed to have neither a myogenic nor neurogenic nature (Table 1) [11,12].

Malignant behavior, although difficult to predict, tends to be correlated with size (larger than 6 cm in diameter) and mitotic rate (more than 4 per 50 high-power fields). Their biologic behavior is usually benign, but they do have a potential for recurrence and metastasis [13].

In conclusion, the present case was not considered to have malignant potential because of its low mitotic rate and low cellularity, and it was classified as uncommitted type by immunohistochemical examination. A large number of cases with complete follow-up are needed to establish reliable criteria of malignancy in these tumors.

### Table 1.

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REFERENCES