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Clinical presentation of gastrointestinal stromal tumors and treatment of operable disease

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Abstract

Gastrointestinal stromal tumors (GISTs) are generally found in the stomach or small intestine and less commonly in the colon, rectum or an intra-abdominal site. The patients symptoms on presentation are most commonly gastrointestinal bleeding. Surgery remains the standard treatment for nonmetastatic GISTs, but rates of disease recurrence are significant — 5% in primary disease and 90% in locally advanced disease. Five-year survival following surgical resection varies between 35% and 65% on the basis of several published studies. Clinical knowledge of the prognosis of patients with GISTs remains rather limited — small tumor size, low-grade mitotic index and stomach location are factors associated with a more favorable prognosis.

Keywords: Gastrointestinal stromal tumor; Surgical treatment

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal neoplasms affecting the gastrointestinal tract. On presentation for possible surgical resection, most patients have some symptoms, most commonly gastrointestinal bleeding and pain/dyspepsia. In a series of 55 patients evaluated at the Massachusetts General Hospital (MGH), for example, gastrointestinal bleeding and pain/dyspepsia were found in 26% and 14% of patients, respectively [1]. In this study, fewer that 10% had a palpable mass or perforation, and obstruction was only found in 3% of patients. However, in a series of 200 patients evaluated at the Memorial Sloan-Kettering Cancer Center (MSKCC), most patients presented with gastrointestinal bleeding [2].

Most GISTs are found in the stomach or small intestine, with about 10% affecting the rectum and 5% affecting the colon or an intra-abdominal site. The mesentery, omentum and esophagus are affected much less frequently. In the MGH series of patients, GISTs affected the stomach and small intestine in 47% and 24% of cases, respectively [1]. Similarly, in the MSKCC series, the stomach and small intestine were the primary tumor site in 39% and 32% of cases, respectively [2].

The results of the MSKCC series illustrate the pattern of malignant disease on presentation. Metastatic disease was found in nearly half of these patients. Most of the others presented with primary disease, although locally recurrent disease was found in 7% of the cases. In those with metastases, the liver was the most commonly affected site with an incidence of 65%. Peritoneal metastases were found in 21% of the cases, whereas metastases to lymph nodes, bone and lung were seen much less frequently.

Surgery remains the standard treatment for nonmetastatic GISTs. The tumor may have a pseudocapsule and should be removed en-bloc without a wide resection margin [3]. However, when any recurrent GISTs are included in the series the resection rate drops to 40% from 55%. Local peritoneal tumor seeding is common and a local peritonectomy should be performed when feasi-

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Table 1
Five-year survival of patients with GISTs following surgical resection

Study location institution	Years covered	Number of patients evaluated	Number of patients completely resected (%)	5-year survival (%)
Mayo Clinic [7]	1950–1974	108	52 (48)	50
MSKCC [8]	1949–1973	38	20 (53)	65
MCV [9]	1951–1984	51	30 (59)	63
MDACC [10]	1957–1997	191	99 (52)	48
MGH [1]	1962–1986	55	40 (73)	35
MSKCC [2]	1982–1998	200	80 (40)	54

MSKCC = Memorial Sloan-Kettering Cancer Center; MCV = Medical College of Virginia; MDACC = MD Anderson Cancer Center; MGH = Massachusetts General Hospital.

ble. Regional lymphadenectomy should be avoided since GISTs seldom spread to lymph nodes [4,5].

The resection rate for GISTs depends on the type of disease. In primary disease, resection rates of 70%–86% have been reported in various retrospective analyses. However, when any GISTs are included, the resection rate drops to 40%–55%. Complete resection of malignant GISTs is seldom curative, inasmuch as disease recurrence is quite common. In patients with local disease, the recurrence rate is 35%. However, in patients with locally advanced disease or disseminated disease, the recurrence rate is 90% after complete resection. The liver is the most common site of recurrence, but in approximately half of all cases, the disease will recur locally. In 15% of the cases, disease recurs at extra-abdominal sites.

Five-year survival after surgical resection varies considerably in published series of patients with GISTs (Table 1). Many of these series include patients seen over a period of more than 20 years, but rarely do they include more than 100 patients. At MD Anderson Cancer Center, for example, a total of 197 patients were seen from 1957 to 1997, and only 99 were resected. In this series, the 5-year survival rate was 48%. In the other series, the 5-year survival rates ranged from 35% to 65%. Those with the lowest survival rates generally involved a higher percentage of patients with disseminated disease.

Several factors independently predict the prognosis of GISTs following resection: tumor size, mitotic index and location. Tumors of <5 cm in diameter are associated with a better survival rate than those that are 5–10 cm, which in turn have a better prognosis than those of >10 cm. Low-grade tumors (mitotic index <10 per 50 high-power fields) also show better survival than high-grade tumors (mitotic index >10 per 50 high-power field). Finally, GISTs found in the stomach are associated with better survival than those located in the small intestine. Limited survival information is available for GISTs found in other locations. Age has also been suggested as an independent prognostic factor, but in the published studies, it was not censored for cancer deaths [6].

Available clinical knowledge about the prognosis of patients with GISTs remains rather limited. A number of retrospective studies have been published, but most involved relatively small numbers of patients even though these analyses considered time periods of 15–20 years or longer. Prospective population-based studies are needed to define the incidence of benign and malignant GISTs. More importantly, a staging system for GISTs remains to be defined, which would allow comparisons between different tumor locations and different published series.

References

[1] Dougherty MJ, Compton C, Talbert M, Wood WC. Sarcomas of the gastrointestinal tract. Separation into favorable and unfavorable prognostic groups by mitotic count. *Ann Surg* 1991, **214**: 569–574.
[2] DeMatteo RP, Lewis JJ, Leung D, Mudan SS, Woodruff JM, Brennan MF. Two hundred gastrointestinal stromal tumors: recurrence patterns and prognostic factors for survival. *Ann Surg* 2000, **231**: 51–58.
[3] Lehnert T. Gastrointestinal sarcoma (GIST) — a review of surgical management. *Ann Chir Gynaecol* 1998, **87**: 297–305.
[4] Fong Y, Coit DG, Woodruff JM, Brennan MF. Lymph node metastasis from soft tissue sarcoma in adults. Analysis of data from a prospective database of 1772 sarcoma patients. *Ann Surg* 1993, **217**: 72–77.
[5] Katai H, Sasako M, Sano T, Maruyama K. Surgical treatment for gastric leiomyosarcoma. *Ann Chir Gynaecol* 1998, **87**: 293–296.
[6] Emory TS, Sobin LH, Lukes L, Lee DH, O'Leary TJ. Prognosis of gastrointestinal smooth-muscle (stromal) tumors. Dependence on anatomic site. *Am J Surg Pathol* 1999, **23**: 82–87.
[7] Akwari OE, Dozois RR, Weiland LH, Beahrs OH. Leiomyosarcoma of the small and large bowel. *Cancer* 1978, **42**: 1375–1384.
[8] Shiu MH, Farr GH, Papachristou DN, Hajdu SI. Myosarcomas of the stomach: natural history, prognostic factors and management. *Cancer* 1982, **49**: 177–187.
[9] McGrath PC, Neifeld JP, Lawrence Jr W, Kay S, Horsley III JS, Parker GA. Gastrointestinal sarcomas. Analysis of prognostic factors. *Ann Surg* 1987, **206**: 706–710.
[10] Ng E-H, Pollock RE, Munsell MF, Atkinson EN, Romsdahl MM. Prognostic factors influencing survival in gastrointestinal leiomyosarcomas. Indications for surgical management and staging. *Ann Surg* 1992, **215**: 68–77.