



Original research

Surgical management of acutely presenting gastrointestinal stromal tumors of the stomach among elderly: Experience of an emergency surgery department



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ARTICLE INFO

Article history:

Received 23 March 2014

Accepted 23 May 2014

Available online 22 May 2014

Keywords:

Gastrointestinal stromal tumors

Elderly

Emergency surgery

ABSTRACT

Introduction: The incidence of gastrointestinal stromal tumors (GISTs), requiring often an emergency surgical management, is extremely rare among elderly. We aimed to present the experience of the Emergency Surgery Department, Brotzu Hospital, in the management of elderly patients with GIST related emergencies.

Methods: This study was carried out on 12 patients with gastrointestinal stromal tumors who presented to in an emergency situation during the period from January 2010 to December 2013. All patients' data, clinical presentations, surgical procedures, complications, and survival data were collected and analyzed. **Results:** Between 2010 and 2013, 12 patients (8 males and 4 females), with a mean age of 70 years (range: 65–79 years) were admitted with different emergency presentations of clinically and radiologically suspected GISTs. The incidence of proximal obstruction was 41.7% of all gastric GIST cases, resulting acute gastrointestinal bleeding and perforation in 41.7% and 16.6% respectively. The mean length of hospitalization was 9.1 ± 2.3 days and there were no postoperative complications or mortalities. At a mean follow-up of 21 months, 11 patients (91.6%) were alive and disease free.

Discussions: Although GISTs are uncommon among elderly, their incidence is increasing especially in their emergency presentation and surgeon should be prepared to treat this condition following the principles of GIST surgery as stated by the GIST consensus conference.

Conclusions: In conclusion our data demonstrate that age itself does not affect the outcome of surgical treatment of GISTs in emergency situation.

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1. Introduction

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal neoplasms with an estimated actual incidence higher than 0.4% among digestive tract [1–4], with predominance of the stomach as the most common site of occurrence in most patients [5–8]. The occurrence of GISTs involves subjects with an unimodal distribution, with a median age of 58 years and a wide age range, from teenagers to 90-year-old [6,8]. Nevertheless gastric GISTs are extremely rare among elderly [9]. Clinical presentation of GISTs ranges from indolent, vague abdominal pain to acute

gastrointestinal bleeding and obstruction [1,10], requiring often an emergency surgical management. Surgical R0 resection represents the gold standard therapy for primary disease [11].

In light of such evidences we aimed to present the experience of the Emergency Surgery Department – Brotzu Hospital, during the period from January 2010 to December 2013 in the management of elderly patients with GISTs related emergencies.

2. Methods

Between January 2010 and December 2013 a total of 12 geriatric patients with proximal obstructive symptoms, acute gastrointestinal bleeding and perforation, due to gastric GISTs, admitted to the emergency room of Brotzu Hospital were enrolled in this retrospective study. Patients were excluded based on the

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following criteria: age < 65 years, no acute presentation of gastric GISTs.

The clinicopathological features of all patients were analyzed on the basis of their medical records. Age, sex, preoperative diagnosis, surgical procedure, type of resection—complete (R0) or incomplete resection (R1 or R2) – stage, GIST risk criteria [12] and outcome of the patients were examined. Comorbidity was based on reference standard diagnostic criteria, including cardiovascular and cerebrovascular disease, chronic obstructive pulmonary disease and chronic liver disease [13]. Also perioperative parameters measured included operative times, morbidity and length of hospitalization was recorded. Histological diagnosis of gastric GIST was obtained from the resected specimen by means of hematoxylin and eosin staining and immunohistological assays for CD117 and CD34. The study also assessed the impact of the age on hospital mortality rate. We present single values as well as the median plus range or, where applicable, percentages, for the respective variables. All patients were followed up performing an upper GI endoscopy and abdominal CT scans every six months according to Scottish GIST guidelines, assessing tumor recurrence and vital status. The adjuvant chemotherapy with imatinib was reserved to high risk GISTs and in case of no radical resection. The study was conducted according to the ethical standards of the Helsinki Declaration. Each patient gave informed written consent.

3. Results

The clinicopathological characteristics of the 12 patients (8 males and 4 females), with a mean age of 70 ± 4.17 years (range: 65–79 years) are reported in Table 1. As regard the acute clinical presentation the incidence of proximal obstruction was 41.7% of all gastric GIST cases, resulting acute gastrointestinal bleeding and perforation in 41.7% and 16.6% respectively. All patients underwent emergency open surgery. Based on the tumor location various surgical procedures were performed: total gastrectomy in 25%, gastric resection in 33.3% and wedge resection in 41.7% and only one patient (8.4%) did not have a radical resection due to peritoneal metastatic spread.

Table 1
Clinicopathological features of patients ($n = 12$) acutely presenting gastric GIST.

	Patients
Age mean (years); (range)	70 (65–79)
Male/female (n)	8/4
Preoperative diagnosis	n (%)
Proximal obstruction	5 (41.7)
Acute gastrointestinal bleeding	5 (41.7)
Perforation	2 (16.6)
Comorbidities	
Cardiovascular disease	12 (100)
Cerebrovascular disease	7 (58.3)
Chronic obstructive pulmonary disease	6 (50)
Chronic liver disease	3 (25)
Gastric GIST location	
Upper third	3 (25)
Middle third	4 (33.3)
Lower third	5 (41.7)
Surgical procedure	
Total gastrectomy	3 (25)
Gastric resection	4 (33.3)
Wedge resection	5 (41.7)
Resection type	
R0	11 (91.6)
R1-2	1 (8.4)
GIST risk	
High risk	7 (58.4)
Intermediate risk	3 (25)
Low risk	2 (16.6)

The average operative time was 158.4 ± 38.4 min. Except for the two cases of perforated GIST there were no episodes of tumor rupture or spillage. No major intraoperative complications were recorded. The mean neoplasms size was 11.3 ± 2.5 cm. Postoperatively, no patient had any evidence of anastomosis/staple line dehiscence and/or stenosis. The mean length of hospitalization was 9.1 ± 2.3 days (range, 7–12 days). There were no postoperative complications or mortalities. At a mean follow-up of 21 months (range, 3–35) 11 patients (91.6%) were alive and disease free. One patient with peritoneal metastasis died after 15 months.

4. Discussion

The major finding of this retrospective study is that gastric GISTs among elderly patients have good prognosis even though their emergency and critical presentations, representing the R0 resection the gold standard therapy. Gastrointestinal stromal tumors, described for the first time by Mazur and Clark in the 1983, are a border line neoplasms arising from interstitial cells of Cajal located within the myenteric plexus [1–4]. The common sites of these mesenchymal neoplasms are the stomach (39–70%) with the lower third region involved in about 42% as encountered in our series and the small bowel (20–32%) [9], even if it has been reported that less commonly they can arise in the colon, rectum and other intra-abdominal organs [14].

Previous evidences are showing that the median age at diagnosis is 58 years [6] while extremely rare among elderly population [9]. Clinical presentation is manifold: commonly they are asymptomatic and the frequent presentations involve abdominal pain, chronic anemia, palpable abdominal mass and dysphagia [15]. Proximal obstruction, acute gastrointestinal bleeding and perforation represent other rare clinical presentations. Generally the obstruction is determined by the direct occlusion of the gastric lumen (usually at the pyloric region or at esophagogastric junction) due to the continued growth of the neoplasm [16]. Gastrointestinal bleeding is usually caused by tumor ulceration at the mucosal level. Perforation of gastric GIST is less frequent, however the rupture in the peritoneal cavity causing massive intra-abdominal bleeding and peritonitis [17]. In all these cases an immediate surgical intervention is required to restore the gastrointestinal transit, to control the gastrointestinal bleeding or to control gastric wall integrity and to prevent abdominal sepsis, with the primary aim targeted at “complete resection of visible as well as microscopic disease, while avoiding tumor rupture and obtain negative margins”, as stated by the GIST consensus conference [11].

The correct surgical management of gastric GIST is still debated: laparoscopic approach should be reserved for lesions smaller than 2 cm, while open surgery would be recommended for tumors larger than 5 cm [18]. Above all the combination of a large tumor and difficult location (esophago-gastric junction/pylorus) makes minimally invasive approach more challenging. In our series we perform in all patients an emergency open approach for the comorbidities of patients as well as the modality of presentation: this represents a safe approach with relatively short operating time (158.4 ± 38.4 min in our series). We were also able to obtain a radical resection in 91.6% of all cases resulting in effective control of the disease with no morbidity and mortality and excellent long-term survival, despite of advanced age of our acute patients. This finding strongly suggest that age itself does not affect the outcome of surgical treatment of GISTs in emergency department. In conclusion, the incidence of gastric GIST in the emergency department is relatively high and the emergency surgeon should be prepared to treat this condition following the principles of GIST surgery as stated by the GIST consensus conference.

Ethical approval

This is a retrospective study based only on the analyses of recorded data and then no Ethical Approval was necessary.

Funding

None.

Author contribution

Marano L: Study design, data analysis, writing.

Arru GMA: Writing, data analysis.

Piras M: Data collections, writing.

Fiume S: Study design, data analysis.

Gemini S: study design, writing.

Conflict of interest statement

All authors have no conflicts of interest or financial ties to disclose.

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