

# SF Journal of Medicine and Research

## Management of Gastrointestinal Stromal Tumors: A Descriptive Study of 10 Cases

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### Abstract

Gastrointestinal Stromal Tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract, originating from stromal cells in different sites of the digestive tract.

**Aim:** The aim of the study is to report a monocentric glance on epidemiological, clinical, histological, and therapeutic characteristics of GISTs and its management.

**Patients and Methods:** A retrospective descriptive study of the cases of GIST in the General Surgery department of Ben Badis University Hospital (Constantine, Algeria) was conducted from January 2005 to March 2012.

**Results:** We collected 10 patients, 6 of them were 6 males (60%); with a median age of 56 years (range, 15-78 years). Abdominal pain was the main symptom (40%), and the tumor was revealed by a complication in 3 cases (30%). The most common sites were the stomach (50%), other sites were the jejunum and the pancreas. The median tumor size was 7.5 cm (range, 1-30 cm). Spindle cell tumor was the major histological type (60%). KIT was positive in the majority of cases (40%).

All patients underwent a surgical resection, and 70% were had adjuvant treatment by Imatinib. One death occurred.

**Conclusion:** Management of GISTs considerably evolved during the last years, and surgical resection remains the cornerstone of the treatment.

**Keywords:** Gastrointestinal stromal tumors; Surgery; Imatinib

### Introduction

Gastrointestinal Stromal Tumors (GISTs) are the most common soft tissue tumors of the gastrointestinal system. Account for 0.1-0.3% of all gastrointestinal neoplasms [1,2]. GISTs originate from mesenchymal stem cells that are believed to differentiate toward intestinal cells of Cajal, a network of pacemaker cells that coordinate peristalsis in the gastrointestinal system [3,4]. Most GISTs express KIT (a tyrosine kinase receptor) on their cell surface, which helps to distinguish them from other gastrointestinal mesenchymal tumors [5]. The aim of the study is to report epidemiological, clinical, histological, and therapeutic characteristics of 10 cases of GISTs.

### Patients and Methods

From January 2015 to December 2016, 10 patients with GISTs were admitted at the general surgery department of Ben Badis University Hospital, Constantine (Algeria).

Patient's data were anonymously collected encompassing Age, Gender, Initial symptoms, Site and size of the tumor, and the presence of a single or multiple tumors.

The immunohistochemical study was performed in four cases (expression of CD117 and CD34). Analysis of PDGFRFA mutation was not performed in our case.

Ethics approval was not required because data was anonymously collected and discussed.

### Results

Ten patients were included: 6 males (60%) and 4 females (40%), with a median age of 56 years (range, 15-78 years). The main symptoms were abdominal pain (40%). Weight loss was noted in

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Received Date: 11 Jun 2020

Accepted Date: 01 Jul 2020

Published Date: 06 Jul 2020

**Citation:** Lemdaoui N, Bataiche A, Boutrid N, Rahmoune H. Management of Gastrointestinal Stromal Tumors: A Descriptive Study of 10 Cases. *SF J Med Res.* 2020; 1(2): 1007.

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1 case (10%). The tumor was revealed by a complication in 3 cases (30%): bleeding in 1 case (10%), perforation in 1 case (10%) and infection in 1 case (10%). no cases were discovered accidentally. 9 patients (90%) had primary tumors and 1 patient (10%) had multiple GISTs. The most common sites of the tumors were the stomach (60%). Other sites, the small intestine (20%) the pancreas (20%). The median tumor size was 7.5 cm (range, 1-30 cm). Spindle cell tumor was the main histological type (60%).

The KIT was positive all cases (40%) with immunochemical study. All patients (100%) underwent a complete surgical resection. Seven patients (70%) have benefited of adjuvant imatinib. Nine patients present are in good evolution. One patient died during immediate postoperative period.

## Discussion

The precise incidence of GISTs is unknown; it is estimated to be approximately 10-20 per million people per year, and 20-30% of them are malignant. Most of the GISTs occur in adults over 40 years old, with a median age of 63 years [6]. Some cases have been reported in children as the case of our study. In our study, the median age was 56 years with a male predominance (60%).

Symptoms of GISTs change according to the location of the tumor. When GIST is symptomatic (70%) and localized in the GI tract, symptoms are occasionally caused by the mechanical effect of the tumor or bleeding [6,7]. Bleeding can occur into the abdominal cavity, causing acute abdominal pain or into the GI tract lumen, causing haematemesis, melena or anaemia. The other signs are abdominal mass, vomiting, abdominal discomfort, and weight loss [8,9]. In our study, abdominal pain was the main symptom (40%). GIST was complicated in three patients, with bleeding noted in 1 patient.

GIST arises most often in the stomach (50%-70%) followed by the small intestine (20%-30%) and large intestine (approximately 10%). GIST in the esophagus is relatively rare, and its incidence in the pancreas, omentum and mesentery is also quite low but has been reported [10,11]. In our small series, tumor originated most frequently from the stomach (60%). A rare (pancreatic) localization was seen in 2 cases.

When GISTs are suspected, CT-scan and endoscopy are ordered. All characteristics such as tumor size and shape, location, existing ulceration and surface depression must be checked [12]. Notably, GISTs widely vary in size with a median size between 5 and 8 cm [13]. The median size was 7.5 cm in our series.

Pathology examination revealed spindle cell tumors in 62% patients, epithelioid in 7% patients, and mixed in 31% patients.

The GISTs are often positive for CD34 and usually positive for CD117 (Tyrosine Kinase, KIT); the latter is probably the best defining feature for these tumors: approximately, 95% of GISTs stain positively for KIT [14]. This was confirmed in all explored patients (40%) in our cohort.

Surgery is the mainstay for primary GIST [2,15]. Surgical cure for primary GIST should rely on a total and complete tumor resection with macroscopically negative margins [16]. At least, minimal surgical margins should be secured, and then en-bloc resection should be done, without injuring the pseudo-capsule.

A question is still debatable whether laparoscopic surgery

is preferable to laparotomy in terms of operation time, blood loss, surgical complications, and prognosis. A small number of retrospective studies advocated that laparoscopic surgery could be safely performed for GISTs that are 5 cm or smaller [17,18].

Imatinib (an oral targeted therapy) is a selective inhibitor of tyrosine kinase and an active agent for tumor control with a remarkable success for GIST.

More and more case reports are published on its potential benefits as an adjuvant preoperative drug for primary GIST [19,20].

Preoperative imatinib treatment of unresectable GISTs resulted in tumor regression and enabled surgical resection. In our study, all tumors were resectable and the surgical resection was the mainstay of treatment, it was indicated in all of cases of the study with a high prevalence of remission.

Imatinib can also be used as an adjuvant therapy after complete primary GIST resection when there is a high risk of local and/or distant recurrence (correlated to the tumor size and the mitotic rate). If initial resistance to imatinib occurs, it is recommended to increase the dose up to 800 mg/day. In case of further progression or intolerance to imatinib, sunitinib and regorafenib have been shown to be highly effective as second- and third-line treatments [21,22].

The major prognostic factors are tumor size, mitotic index, gastric origin, and primary presentation [23-24]. The 5-year survival after surgical resection was 40-75% before the pre-imatinib era with a median survival of recurrence of 15 months [9]. 70% of our patients have benefited of adjuvant Imatinib with 100% of 5 years free survival among this subgroup.

Being a single-center study, the major limitations of our work are the small number of patients and the short duration of data collection (2 years).

## Conclusion

The management of GISTs has considerably evolved during the last few years. Surgical resection, which remains the mainstay of treatment, was indicated in the majority of cases of the study with a high prevalence of remission. The treatment of GIST has been revolutionized by the advent of Imatinib and the prognosis has dramatically improved.

## Acknowledgement

The authors (NL,NB and HR) are supported by grants from the Directorate General for Scientific Research and Technological Development (DGRSDT), MESRS, Algeria.

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