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Epidemiological, Diagnostic and Therapeutic Aspects of Gastro-Intestinal Stromal Tumor, About 16 Cases

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ABSTRACT: Gastrointestinal stromal tumors (GISTs) may be defined as morphologically spindle cell, epithelioid, or occasionally pleomorphic mesenchymal tumours of the gastrointestinal tract that usually express the KIT protein.

METHODS: Our work is a retrospective study carried out on all patients with gastrointestinal stromal tumors with histological confirmation, presented at the Digestive Oncology Surgery and Liver Transplantation Department of CHU IBN ROCHD in Casablanca over 4 years (2020-2023).

RESULTS: The average age was 56 years with sex ratio 1.6H/F.

The main location of the tumor was the stomach.

The most of patiend presented deterioration of general condition with abdominal pain.

Upper GI endoscopy with biopsy was performed in 12 patients, the histopathological study of the biopsies with immunohistochemical study was consistent with a gastrointestinal stromal tumor.

An abdominopelvic CT scan with and without injection was requested in all patients in this series, the result was: well-limited tissue mass, site of calcification and areas of necrosis.

All the patient files in this series were discussed with multidisciplinary team meetings.

Surgery was performed for 14 patients and the surgical approach was laparotomy.

The intraoperative exploration findings are stomach, rectum, small intestine.

The type of resection was determined by the tumor's localization.

CONCLUSION: Although GISTs are uncommon, their incidence is probably increasing.

Its diagnosis should be kept in mind during the work up of patients.

Surgery and imatinib form the first-line therapy and their effectiveness for the majority of patients has been revolutionary.

KEYWORDS: Epidemiology -Diagnostic -therapeutic- gastro-intestinal stromal tumor

INTRODUCTION

Gastrointestinal stromal tumors (GISTs) may be defined as morphologically spindle cell, epithelioid, or occasionally pleomorphic mesenchymal tumours of the gastrointestinal tract that usually express the KIT protein and harbour mutation of a gene that encodes for a type III receptor tyrosine kinase (either *KIT* or *PDGFRA*).

It accounts for less than 1% of all gastrointestinal tumors and about 5% all sarcomas.

It represents a wide clinical spectrum of tumors with different clinical presentations, locations, histology and prognosis. GIST can occur throughout the entire gastrointestinal (GI) tract and may have extragastrointestinal involvement as well.

The following review will discuss the GISTs including, epidemiology, clinical presentation, diagnosis, and treatment.

PATIENTS AND METHODS

This study was carried out on all patients with gastrointestinal stromal tumors with histological confirmation, presented at the Digestive Oncology Surgery and Liver Transplantation Department of CHU IBN ROCHD in Casablanca over 4 years (2020-2023). All patients' data, clinical presentations, radiological and endoscopic data, surgical procedures, complications, and survival data were collected, reviewed and analyzed with approval of local ethics committee.

RESULTS

The number of patients was 16, with an average age of 56 years (ranging from 34 to 77 years) and a sex ratio of 1.6 H/F.

The tumors were located in the stomach in 10 patients, in the small intestine in 5 patients, and in the rectum in 1 patient.

Smoking was the main risk factors in our series, present in 5 patients, all of them was mal. There were other antecedents, like hypothyroidism, diabetes, high blood pressure. There was no similar case in the family.

10 patients presented deterioration of general condition, abdominal pain had been reported in 8 patients, 9 patients with upper gastrointestinal bleeding, one patient with constipation, one patient with rectal syndrome, and another one with acute intestinal obstruction operated in emergency.

The physical examination revealed abdominal tenderness in 7 patients, an abdominal mass in 3 patients, a mass on rectal examination in the patient with a rectal location, the physical examination of the rest of the patients was unremarkable.

Upper GI endoscopy with biopsy was performed in 12 patients presenting with hematemesis or melena. The histopathological study of the biopsies with immunohistochemical study was consistent with a gastrointestinal stromal tumor.

Rectoscopy and biopsy performed on the patient with rectal mass revealed gastrointestinal stromal tumor.

The abdominal ultrasound was performed in 8 patients, because of the abdominal pain, the result was a rounded, well-defined mass of heterogeneous echostructure.

An abdominopelvic CT scan with and without injection was requested in all patients in this series, the result was: well-limited tissue mass, site of calcification and areas of necrosis.

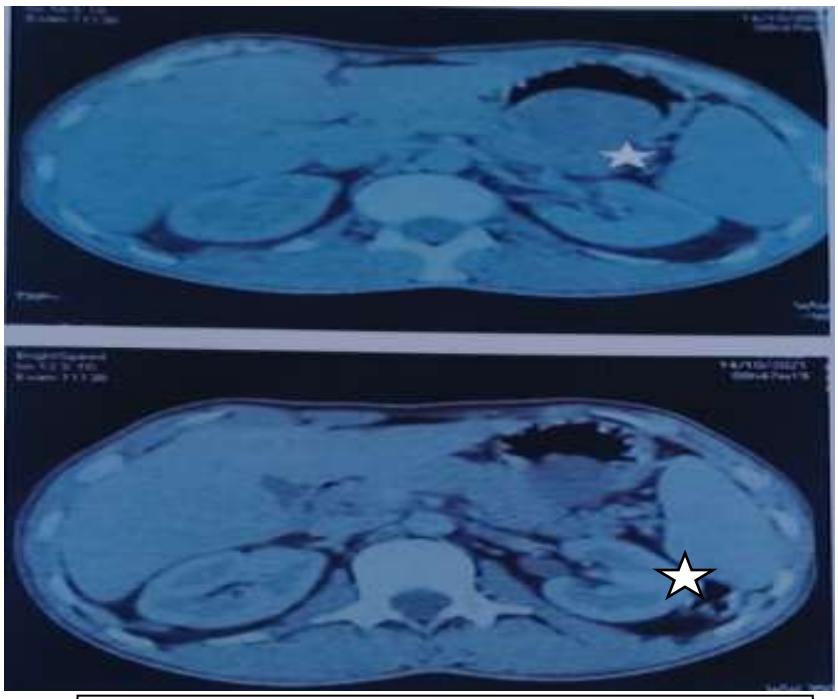
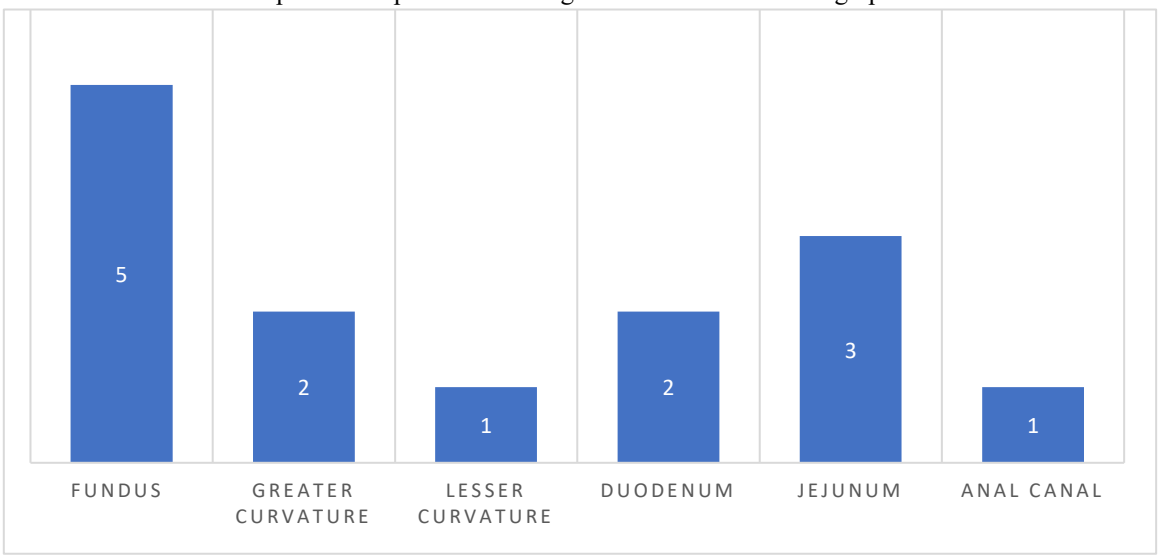


Figure 1: Posterior wall thickness of the gastric body

All the patient files in this series were discussed with multidisciplinary team meetings. The decision was:

- surgery first of the tumor that was localized and resectable (11 patients°)
- start with neoadjuvant therapy (imatinib), then re-evaluate for surgery of a locally advanced tumor(3 patients)
- neadjuvant therapy for patient with metastatic cancer (2 patients in a metastatic situation required medical treatment with imatinib).
- Surgery was performed for 14 patients and the surgical approach was laparotomy.

The intraoperative exploration findings are summarized in the graphic below:



Stomach | Small intestine | Rectum

All operated patients underwent surgical resection.
The type of resection was determined by the tumor's localization.

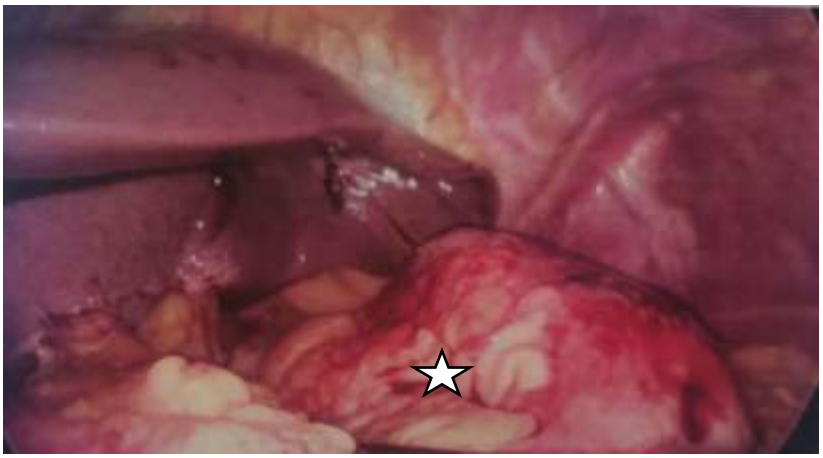


Figure 1 : image of a tumor proliferation of the small curvature:

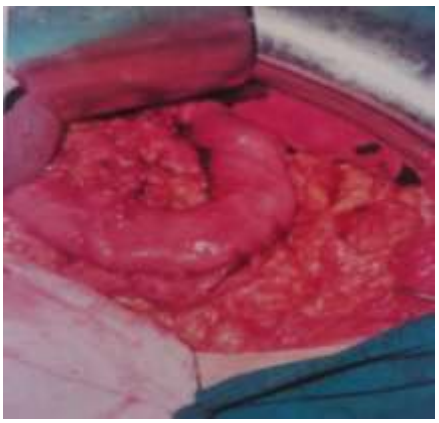


Figure 2 : image of the stomach after

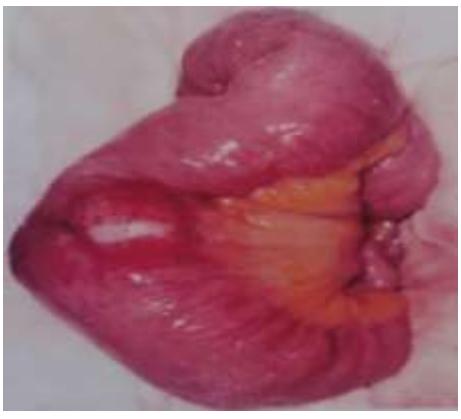


Figure 3: image of a tumor proliferation of the small intestine: gastro-intestinal stromal tumor

DISCUSSION

Gastrointestinal stromal tumors (GISTs) are non-epithelial neoplasms, involving the gastrointestinal tract.
They are rare gastrointestinal (GI) neoplasms accounting for 0.1 to 3% of all GI malignancies(1).
They have an incidence of ~1.2 per 10^5 individuals per year in most countries. Around 80% of GIST have varying molecular changes, predominantly mutually exclusive activating *KIT* or *PDGFRA* mutations, but other, rare subtypes also exist (2).
Gastrointestinal stromal tumors usually present as a sharply demarcated submucosal or subserosal mass in the stomach (60%) and small intestine (25%), and they less commonly arise in the colon, rectum, esophagus, mesentery, and omentum (3), like in our serie, the most frequent location was the stomach .
They show either spindled (70%), epithelioid (20%), or mixed (10%) cytomorphology(4).
Neurofibromatosis type 1–associated GISTs have a predilection for intestinal location, spindled morphology, and multifocality(5), whereas SDH-deficient GISTs are nearly always located in the stomach, display a unique multilobular or plexiform architecture, and show either epithelioid or mixed morphology but virtually never pure spindle-cell morphology (6). In our serie, no cases were associated with neurofibromatosis.
Clinical manifestations vary according to tumor location and size. Small size GISTs are usually asymptomatic and are diagnosed incidentally during an endoscopic exploration, on radiological imaging for a different purpose, or during surgery . In the absence of complications, such as upper digestive hemorrhage/hemoperitoneum, tumor perforation, intestinal obstruction or obstructive jaundice, the symptoms are nonspecific (early satiety, anemia, abdominal pain, swelling)(7). In our study, the most of symptoms were nonspecific with upper gastrointestinal bleeding
Most of GISTs are located in the stomach or small bowel. Diagnosis is suspected on imaging and endoscopic studies, and confirmed by tissue acquisition with immunohistochemical staining, like the most of case that we treated.
Surgical resection is the treatment of choice. But various endoscopic modalities of resection are increasingly being tried. In our case, the surgery was adopted.
Tyrosine kinase inhibitors are extremely useful in the management of large GISTs, unresectable GISTs and metastatic GISTs. Treatment options for metastatic GISTs also include radiotherapy, chemotherapy, hepatic artery embolization, chemoembolization and radiofrequency ablation (8).
In our serie, 2 patients in a metastatic situation required medical treatment with imatinib.

CONCLUSION

Although GISTs are uncommon, their incidence is probably increasing.
Its diagnosis should be kept in mind during the work up of patients.
Surgery and imatinib form the first-line therapy and their effectiveness for the majority of patients has been revolutionary.

CONFLICT OF INTEREST STATEMENT

Authors of this article have no conflict or competing interests.
All of the authors approved the final version of the manuscript.
I declare on my honor that the ethical approval has been exempted by my establishment
Consent to publish the case report was not obtained. The report does not contain any personal information that could lead to the identification of the patient.

FUNDING INFORMATION

The authors declared that this study has received no financial support.

HIGHLIGHTS

1. They are rare gastrointestinal (GI) neoplasms accounting for 0.1 to 3% of all GI malignancies
2. This study was carried out on all patients with gastrointestinal stromal tumors with histological confirmation, presented at the Digestive Oncology Surgery and Liver Transplantation Department of CHU IBN ROCHD in Casablanca over 4 years (2020-2023).
3. The average age was 56 years with sex ratio 1.6H/F.
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8. All the patient files in this series were discussed with multidisciplinary team meetings.

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10. The intraoperative exploration findings are stomach, rectum, small intestine.
11. The type of resection was determined by the tumor's localization.
12. Although GISTs are uncommon, their incidence is probably increasing.
13. Its diagnosis should be kept in mind during the work up of patients.

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