

Gastrointestinal Stromal Tumors: Case Series of a Single Institution Experience

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Abstract: Gastrointestinal Stromal tumors occur in the entire GI tract and are the most common mesenchymal tumours of the GI tract. A great majority of them occur in the stomach (60% to 70%) and small intestine (25% to 35%), with rare occurrence in the colon and rectum (5%), oesophagus (<2%) and appendix. Here is a case series of 21 cases in our institution from Jan 2008 to July 2017 diagnosed as gastrointestinal stromal tumors either pre-operatively or post-operatively and managed surgically. Here are some observations pertaining to gastrointestinal stromal tumors their surgical intervention, histopathological diagnosis and post operative treatment.

Keywords: Gastrointestinal stromal tumour, case series, Gist

1. Introduction

GISTs occur in the entire gastrointestinal (GI) tract and are the most common mesenchymal tumours of the GI tract [1-2]. They range from small benign tumours to sarcomas at all sites of occurrence [3]. A great majority of them occur in the stomach (60% to 70%) and small intestine (25% to 35%), with rare occurrence in the colon and rectum (5%), oesophagus (<2%) and appendix. Some GISTs are primary in the omentum, mesentery or retroperitoneum and are unrelated to the tubular GI tract. [1]

GISTs are characterized with diverse clinical presentations, including acute and chronic GI bleeding, abdominal pain, presence of an intra-abdominal mass, anorexia and intestinal obstruction. [4]

GISTs are believed to originate from a mesenchymal stem cell that differentiates towards an Interstitial Cell of Cajal (ICC) phenotype [5]

The study is a retrospective analysis of all the Gists cases with presentation, surgical approach, histopathological assessment

2. Case Series

21 patients were diagnosed with GIST from Jan 2008 to July 2017 treated surgically with curative intent at JJM Medical College Davangere. Clinical records, postoperative events and pathological reports were reviewed in each case.

Histology and immunohistochemistry analyses

The histological diagnosis of all Gists had been confirmed at the department of pathology JJM medical college Davangere. Specimens were fixed in 10% formaldehyde and processed routinely for paraffin embedding. 3µ thick sections were stained with haematoxylin-eosin. Mitoses were counted in 50 high power fields.

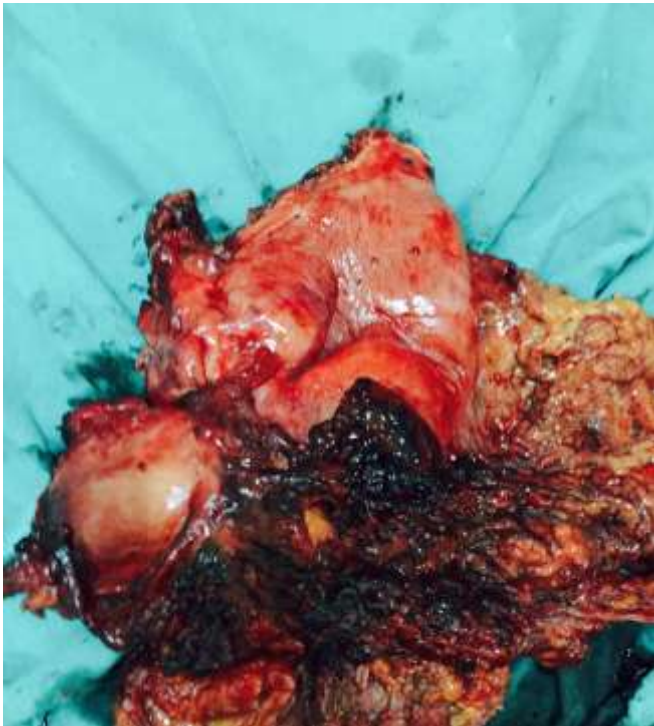
Immunohistochemistry was performed in all stromal tumors using a panel of commercially available antibodies directed against the following antibodies. CD117, CD34.

3. Results

No	Age	Sex	Location	Size	Mitoses	Type of SX
1	47	Male	Gastric antrum	3.5CM	<5	Elective
2	53	Male	Ileum	2.5CM	<5	Elective
3	57	Female	Gastric body	1.5CM	<5	Elective
4	58	Male	Ileum	8.5CM	>20	Emergency
5	62	Male	Gastric antrum	2CM	<5	Elective
6	64	Male	Gastric subpylorus	4CM	<5	Emergency
7	67	Female	Jejunum	14CM	<5	Emergency
8	68	Male	Gastric Antrum	1.5CM	<5	Elective
9	69	Female	Gastric body	6CM	<5	Elective
10	72	Male	Ileum	2.5CM	>20	Elective
11	75	Female	Large bowel	16CM	>20	Emergency
12	76	Male	Ileum	1.5CM	<5	Elective
13	77	Female	Jejunum	2CM	<5	Elective
14	79	Male	Duodenum	3.5CM	<5	Elective
15	80	Female	Gastric body	5.5CM	<5	Elective
16	82	Male	Mesentery	4CM	<5	Elective
17	83	Male	Ileum	7CM	<5	Emergency Volvulus
18	84	Male	Jejunum	2CM	<5	Elective
19	85	Male	Gastric Pylorus	1CM	<5	Elective
20	86	Female	Gastric body	3CM	>20	Elective
21	89	Male	Gastric pylorus	7CM	<5	Emergency

From 21 patients with Gist treated in our department 14 were male (66.6%) and 7 were female (33.3%) with median age at diagnosis being 68 years (range 47-89). The tumor size varied from 1.5cm to 16cm. The gists were diagnosed on stomach (52.3%) ileum (23.8%) jejunum (14.2%) mesentery (4.7%) large bowel (4.7%). Immunohistochemistry performed in these tumors showed diffuse strong positivity for CD117 (11/16) 68.75% CD 34 (13/16) 81.25%. 6 cases (28.57%) presented as emergency with acute abdominal conditions like perforation/obstruction. 15 cases (71.4%)

were elective cases. Out of 6 emergency cases 2 (33.33%) were gastric outlet obstruction, 1(4.76%) presented as perforation and 2 (9.52%) as intraluminal obstruction and 1 (4.76%)s volvulus. 4 cases (19.04%) had mitoses >20 and were started with imatinib therapy. 1 case with 14cm tumor with <5 mitoses was started imatinib therapy . All emergency operated cases had recurrence (100%)



No	Age	Location	Presentation and Laparotomy proceeds
1	47	Gastric antrum	Diagnosed on upper GI Endoscopy for gastritis. Wedge resection done
2	53	Ileum	Diagnosed on ultrasound resection anastomosis done
3	57	Gastric body	Diagnosed on upper GI Endoscopy for gastritis. Wedge resection done
4	58	Ileum	Presented as obstruction emergency laparotomy and resection with ileostomy done
5	62	Gastric antrum	Diagnosed on ultrasound Wedged resection done.
6	64	Gastric subpylorus	Presented as gastric outlet obstruction gastroduodenostomy done
7	67	Jejunum	Presented as perforation resection with ileostomy done
8	68	Gastric Antrum	Diagnosed on upper GI Endoscopy for gastritis. Wedge resection done
9	69	Gastric body	Presented with vomiting and palpable mass wedge resection done
10	72	Ileum	Diagnosed on ultrasound resection anastomosis done
11	75	Large bowel	Presented with obstruction resection with colostomy
12	76	Ileum	Diagnosed on ultrasound resection anastomosis done
13	77	Jejunum	Diagnosed on ultrasound resection anastomosis done
14	79	Duodenum	Diagnosed on Upper GI endoscopy duodeno-duodenostomy done
15	80	Gastric body	Presented as palpable mass wedge resection done
16	82	Mesentry	Diagnosed on ultrasound resection done
17	83	Ileum	Presented as volvulus resection anastomosis
18	84	Jejunum	Diagnosed on ultrasound resection anastomosis done
19	85	Gastric Pylorus	Presented as gastric outlet obstruction gastroduodenostomy done
20	86	Gastric body	Diagnosed on upper GI Endoscopy for gastritis. Wedge resection done
21	89	Gastric pylorus	Presented as gastric outlet obstruction gastroduodenostomy done

4. Discussion

Gastrointestinal stromal tumor can occur anywhere in the GI tract. They are submucosal lesions frequently growing endophytically. They also manifest exophytically. Sizes of these tumors have been reported from small 1 cm to large 40 cm diameter excrescences. [6] In our retrospective study we have observed that elective surgeries have almost nil recurrence rate while emergency laparotomies with perforation, obstruction, tumor spillage indicate recurrence. Guidelines indicate that radical surgical resection is the gold standard for localized primary GIST. [7]

Scheme of predicting risk factors [8]

Risk	Tumor size	Mitotic count
Very low	<2CM	<5/50 HPF
Low	2-5CM	<5/50 HPF
Intermediate	<5CM	6-10/50 HPF
	5-10CM	<5/50 HPF
High	>5CM	>5/50 HPF
	>10CM	ANY MITOTIC RATE

The number of mitotic figures present can be used to histologically grade GIST. In general, GIST with less than 1 mitotic figure per 50 high-powered fields (HPFs) are correlated with benign behavior. A finding of 1-5 mitoses per 10 HPFs suggests potential malignancy. A finding of more than 5 per 10 HPFs indicates malignancy. A finding of more than 10 per 10 HPFs denotes high-grade malignancy.^[9]

Prognostic factors include age, location (oesophageal and gastric GIST having a better prognosis than intestinal GIST), staging, tumor size and mitotic activity. Size and mitoses are most useful predictors. Mutation of c-kit gene is a strong prognostic predictor of malignancy. Metastases occur most commonly to liver and peritoneum.^[10]

Currently, roughly two-thirds of patients with GIST will have metastasis or recurrence. Median time to recurrence after surgery is 19-25 months.^[11]

5. Conclusion

This study shows a male preponderance in occurrence of GISTs. They have a peak incidence in persons aged 47 to 89 years, but have a broad distribution. Clinically, these tumours have a wide spectrum at presentation. They range from incidentally detected, asymptomatic GISTs, to large malignant tumours, which frequently cause the patient to seek medical attention. The symptoms are as a result of their size or tendency to ulcerate and bleed. The most common presenting signs and symptoms include abdominal pain, gastrointestinal bleeding manifested by haematemesis or melena, and a palpable mass. Although these tumours rarely cause obstruction, they can perforate. GISTs can exhibit one of the two growth patterns. In the endoenteric growth pattern, tumours tend to be submucosal or intramural; these are more likely to ulcerate early on, and bleeding typically leads to a relatively early diagnosis. An exophytic pattern is much slower, and the tumour is not found until a palpable mass or bleeding from excavation into the bowel lumen is noted.

Surgical intervention aims at complete resection of the tumour. Even if the tumour is large and has spread into other organs, this may improve long term survival. Imatinib has led to a remarkable improvement in the treatment of GIST and may promise a longer lifespan as compared to those not taking the drug.

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