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Original Article

Gastrointestinal Stromal Tumour (GIST): Experience on 20 Patients

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Abstract:

Gastrointestinal Stromal Tumours (GISTs) are a rare group of mesenchymal tumour arising in gastrointestinal tract. The clinicopathological features are variable and surgical resection with chemotherapy is the main modality of treatment. We retrospectively analyzed 20 different types of GIST patients over a period of 9 years to understand clinical presentation, pathological features, treatment and survival. The tumour was most commonly seen in the patients (75%) of age range of 30-60 years. Twelve (60%) were male and 8 (40%) were female patient. Forty percent of the tumours were located in the stomach followed by small intestine (35%) and omentum (20%). Abdominal mass (70%), abdominal pain (45%) and GIT bleeding were the common clinical presentation. The size of the tumours ranged from 3 to 22 cm. All patients of our series underwent surgical excision of tumour. NIH risk categorization showed 15 (75%) patients belong to low risk category, 2(10%) patients were of intermediate risk group and 3 (15%) were of high risk group. Out of 20 cases CD117 positivity was seen in 17 (85%) cases offered adjuvant Imatinib mesylate. No patient in our series offered neo adjuvant chemotherapy. Postoperative follow up was done 6 monthly. GIST's are most common non epithelial tumour of the GIT. It is common in 4th and 5th decades. Abdominal mass and abdominal bleeding are the most common clinical presentation. Stomach is the most common site. Surgical resection is the best modality of treatment. Imatinib mesylate is used for adjuvant therapy. Regular follow up helps in diagnosing disease recurrence.

Key words: Gastrointestinal Stromal Tumour, Surgical resection, Imatinib mesylate.

Introduction:

Gastrointestinal Stromal Tumours (GISTs) are the commonest mesenchymal tumours in the gastrointestinal tract accounting for less than 1% of all gastrointestinal tumours, arising from the Cajal's interstitial cells located in the mesodermal tissue[1]. The predominant localization of GISTs are stomach (60%) and small intestine (20-30%) but GISTs may develop in the colorectum, oesophagus, mesentery, omentum and retroperitoneum[2]. The tumours have variable clinical presentation from being asymptomatic to symptomatic like abdominal mass, gastrointestinal bleeding and abdominal pain. The pathological diagnosis is complex and is based on specific ultrastructural characteristic and positivity for specific immune phenotype markers[3].

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Most GISTs are detected by endoscopy as a submucosal tumour. USG, contrast CT scan of abdomen and follow though x-rays of gut are the other modalities of investigations and diagnosis is often made after surgery by histopathological examination. Complete surgical resection is the initial treatment for primary and localized GIST. Imatinib mesylate is a first line standard chemotherapy. The overall 5-year survival rate in various studies varies from 28% to 66%[3-4].

We present here 20 different types of GIST patients over a period of 9 years to understand clinical presentation, pathological features, treatment and survival.

Materials and Methods:

We studied 20 patients of GIST who were managed by our team in different hospital of Faridpur city, Bangladesh between January 2008 to December 2016. All patients were evaluated by clinical examination and imaging. All patients demographic data, tumour characteristics, surgical procedure, postoperative chemotherapy and follow up were entered in a specifically designed data sheet and were analyzed retrospectively.

Each diagnosis of GIST was confirmed by postoperative histopathology. Pathological factors including tumour site, size, mitotic index and immunochemical staining for CD117 were recorded. The tumour were categorized into very low, low, intermediate and high risk groups according to modified NIH risk classification criteria.

Table I: Distribution of patients according to age (n=179)

Risk classification	Tumour size (cm)	Mitotic rate per 50 HPF	Tumour site
Very Low Risk	<2	<=5	Any
Low Risk	2.1-5.0	<=5	Any
	2.1-5.0	>5	Gastric
Intermediate Risk	<5	6-10	Any
	5.1-10	<=5	Gastric
High Risk	Any	Any	Tumour rupture
	>10	Any	Any
	Any	>10	Any
	>5	>5	Any
	2.1-5	>5	Non gastric
	5.1-10.0	<=5	Non gastric

HPF- High Power Field

Patient who were positive for CD117 were offered postoperative adjuvant chemotherapy in the form of imatinib mesylate. Postoperative follow up was done 6 monthly with physical examination, imaging studies like chest X-ray, USG and CT scan of abdomen. Survival data was obtained from outpatient visits and making phone call to the patient party.

Results:

During the period of 2008 to 2016, 20 patients with GIST were studied (Table II). The age of the patient ranged from 25-79 years and mean age at presentation was 56 years. Most of the patients (15/75%) are in the age range of 30-60 years. Twelve (60%) were male and 8 (40%) were female, male female ratio was 12:8. The most common clinical presentation was abdominal mass (70%) followed by abdominal pain (45%) and GIT bleeding (15%). Fifteen percent of patient presented with other clinical symptoms including fever, fatigue and loss of appetite.

Table II: Demographics and clinical characteristics

Variables	Number of patients (%)
Age	
<30 years	2(10%)
30-60 years	15(75%)
>60 years	3(15%)
Gender	
Male	12(60%)
Female	8(40%)
Symptoms	
Abdominal mass	14(70%)
Abdominal pain	9(45%)
GI bleeding	3(15%)
Other (Fever, fatigue, loss of appetite)	3(15%)

Table III shows the tumour characteristics. The most common site of the tumour was stomach (40%) followed by small intestine (35%) and omentum (20%). The tumour size ranged from 3cm to 22cm. The majority of the tumours were between 5 to 10 cm (55%). Tumour size less than 5 cm in 4 (20%) cases and more than 10 cm in 5 (25%) cases. NIH risk categorization based on the size of the primary tumour and mitotic index showed 15 (75%) patients belong to low risk category, 2(10%) patients were of intermediate risk group and 3 (15%) were of high risk group. Immunohistochemically CD117 positivity was seen in 17 (85%) cases. Immunohistochemistry of CD34, SMA, Desmin and S100 were not done in this study.

Table III: Tumour characteristics

Variables	Number of patients (%)
Tumour location	
Stomach	8(40%)
Duodenum	1(5%)
Small gut	6(30%)
Omentum	4(20%)
Colon	1(5%)
Tumour size	
<5 cm	4(20%)
5-10 cm	11(55%)
>10cm	5(25%)
NIH risk categories	
Very Low risk	0(0%)
Low risk	15(75%)
Intermediate risk	2(10%)
High risk	3(15%)
CD117 immunostaining	
Positive	17(85%)
Negative	3(15%)

Table IV shows the operative procedures. Among stomach GIST, 4 cases involves distal stomach and partial gastrectomy was done. Total gastrectomy was done in 3 cases where involvement is in the proximal stomach. One case of stomach GIST involving greater curvature underwent sleeve resection. Only one case of GIST arising from 2nd part of duodenum underwent Whipples procedure. All of the 6 cases of small gut GIST required resection and anastomosis. Among 4 cases of omental GIST, 3 required only omentectomy and 1 required omentectomy and resection anastomosis. In our series there in only one case of rectal GIST which underwent anterior resection.

Table IV: Surgical treatment

Tumour location	Total Numbers	Operative procedures	Number
Stomach	8	Partial gastrectomy	4
		Total Gastrectomy	3
		Sleeve resection	1
Duodenum	1	Whipples operation	
Small gut	6	Resection and anastomosis	6
Omentum	4	Omentectomy	4
		Omentectomy and Resection and anastomosis	1
Colon (Rectum)	1	Anterior Resection	1

Out of 20 cases CD117 positivity was seen in 17 (85%) cases offered adjuvant Imatinib mesylate but 10 patients received it and 7 patients did not receive imatinib due to financial cause. No patient in our series offered neo adjuvant chemotherapy.

Postoperative follow up was done 6 monthly. Two patients died of medical co morbidities within 6 months. Four patients died during 2 years follow up. Six patients died during 2-5 years of follow-up. Remaining 8 patients are still in our follow up.

Fig 1: Omental GIST with torsion

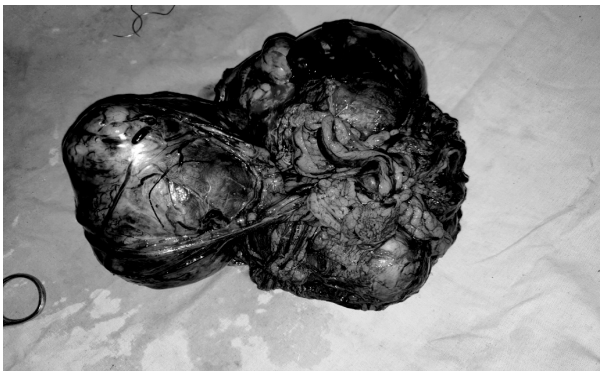

Fig.2: Omental GIST

Discussions:

Mesenchymal tumours are rare tumours of gastrointestinal tract. GIST constitute 80% mesenchymal tumours of the gastrointestinal tract and constitute 5% of all sarcoma[4]. It had been reported that the annual occurrence of GIST were 11-15 per million people[5,6]. Majority of the GIST occur in the fourth and fifth decades with mean reported age in different series varying between 58 and 60 years[7,8]. In our study mean age was 56 years, youngest patient was 25 years of age and the oldest was 79 years. In our study there was male predominance (60%), though most of the studies have not shown any significant gender difference[9].

GIST may arises anywhere in the GIT and also in extra gastrointestinal locations including omentum, mesentery and retroperitoneum[2]. Stomach and small intestine are the common sites of GIST, a small percentage occur in rectum, anal canal and elsewhere in abdominal cavity[9]. According to our data 40% (8 cases) were of stomach origin, 35% (7 cases) originated from mesentery. Uncommon sites like omentum were involved in 4 cases (20%) and rectum in 1 case (5%). The percentage of the site of occurrence in present series is comparable to the most of the studies[7,9-10]. The tumour size ranged from 1-30 cm[11]. In our series the majority of the tumours were between 5-10 cm (55%). Twenty percent of tumours were less than 5 cm and 25% of tumours were more than 10 cm in diameter.

GISTs have no specific symptom, increasing the difficulty in early diagnosis and treatment. In our data, the most frequent complaint is abdominal lump (70%) which is consistent with other literature[9,12-13]. Abdominal pain and discomfort are present in 45% of cases. GI bleeding is rare presentation and in our series we had one patient who was diagnosed to have GIST in rectum after an episode of PR bleeding and two other patients had GI bleeding with other symptoms.

There are two principal histological patterns in GIST: spindle cell (60-70%) and epitheloid (30-40%). Combination of the two is frequent[3,14].

NIH risk categorization based on size of primary tumour and the mitotic index GISTs are classified into very low, low, intermediate and high risk.

In our study the distribution of low, intermediate and high risk group were 75%, 10% and 15% respectively. This result consistent with most of the published literature[15-17].

Typical GISTs are characterized by positive immunohistochemical staining of CD117, a transmembrane tyrosine kinase receptor. Immunohistochemistry studies to determine CD117 positivity is required to prognosticate the response to postoperative adjuvant chemotherapy[9]. In our study CD117 is positive in 17 cases (85%)

High risk patients generally relapse within 2-3 years, while low risk patients may take longer periods for relapse[11, 18]. The routine follow-up schedules vary from institution to institution. In general, intermediate and high risk patients are advised follow-up with CT scan every 3-4 months for 3 years, then every 6 months until 5 years and yearly afterwards; for low tumours, follow-up is carried out with CT scan every 6 months for 5 years[11]. In our series, Postoperative follow up was done 6 monthly with clinical examination, USG of whole abdomen and in selected cases by CT scan.

Conclusion:

GISTs are common mesenchymal tumours of gastrointestinal tract. They are common in stomach followed by small intestine. They occur in fourth and fifth decades of life and predominant in male. Abdominal mass and abdominal pain is the common presentation. Multidisciplinary treatment planning is needed involving pathologists, radiologists, surgeons and medical oncologists in the management of GISTs. Surgery is the best option for operable cases. Immunohistochemistry should be done in all, and those who are in high risk, metastatic and unresectable groups requires imatinib mesylate. Patients who are CD117 positive show good response to imainib mesylate.

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