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A GIST OF GIST (GASTROINTESTINAL STROMAL TUMORS)

Medical Education

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KEYWORDS

INTRODUCTION

- Gastrointestinal stromal tumours are the most common mesenchymal neoplasm of gastrointestinal tract
- Type of smooth muscle sarcoma- derived from interstitial cells of cajal, a Gi pacemaker cell.
- Incidence: 7-15 cases/ million/ year
- Gist overexpress.
- Kit – tyrosine kinase receptor
- Mutation in PDGFR alpha
- Most commonly arise in stomach(40-60%), small intestine(20-40%),&colon,rectum(5-15%), mesentery(1%)
- Diagnosis of GIST is based on knowledge of macros opic and histological characteristics and immunohistochemical spectrum.
- Wide range of clinical behavior, varying from small lesions discovered by chance to large lesions with high aggressiveness and dissemination capacity. Symptoms are not specific and depend on size and location.
- Many lesions are small (less than 2 cm) and do not cause symptoms, but are discovered incidentally during endoscopic procedures, abdominal surgery, or radiological imaging.
- These lesions can also cause nonspecific discomfort such as dyspepsia and emesis, and may sometimes appear along with masses, severe

Aim

The objective of the present article is to describe the clinical presentation, diagnosis, management, recurrence, and survival of GISTs

Methodology

- **Study Design:** retrospective study
- **Duration :** 1 year
- **Place :** Department of general surgery, GVMCH

Case Series:
A total of 5 cases of GISTs were reported during the 1 year study period. All cases of diagnosed GISTs were selected from department records.

Patient characteristics (age and sex) and tumorcharacteristics (site, type, mitotic activity) were analyzed in these cases. The age range of patients

VARIABLES	CASE1	CASE 2	CASE 3	CASE 4	CASE 5
AGE (years)	60	55	60	67	46
SEX	Female	Female	Female	Female	Female
CLINICAL FEATURES	Abdominal Mass	Abdominal pain	Abdominal Vomiting mass	Abdominal pain	Abdominal pain
SITE	Gastric	Large intestine	Small bowel ileum	Mesentery	Gastric
SIZE	19*12*13 cm	6*3*2 cm	7*5*3cm	8*8cm	4*3cm
SURGERY	Open	Open	Open	Open	Open
HISTOLOGICAL GRADE	Low grade	High grade	Low grade	High grade	High grade
IHC for CD117	Positive	Positive	Positive	Positive	Positive
FOLLOW	Imatinib	Imatinib	Imatinib	Imatinib	Imatinib

Population	n	%
Male	0	100
Female	5	100

Symptoms		
Pain	2	40
Mass	2	40
Obstruction	1	20
Location		
Stomach	2	40
Large intestine	1	20
Small intestine	1	20
Mesentry	1	20
Risk		
High	3	60
Intermediate	0	
Low	2	40

Surgery		
Open	5	100
Laproscopy	0	0
None	0	0
Immuno histo chemistry		
CD117	5	100
CD34	3	60

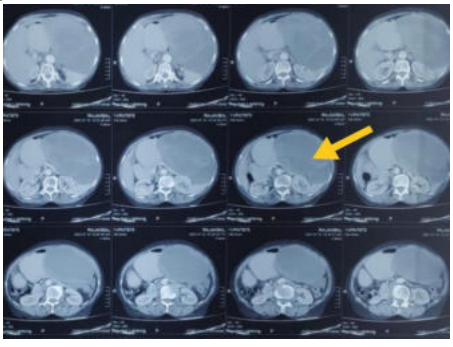
Case:1
60 year female
1. Abdominal pain- left upper quadrant*1week
2. Swelling over right abdomen*1week

- H/o Malena*6months
- H/o loss of appetite*2months
- vitals stable

P/A:
- Soft
- Tenderness over left hypochondrium
- Mass of size 10*12cm over left hypochondrium,non mobile, not well defined
- No guarding/rigidity
- Bowel sounds+

Other Systems Examination: normal

Investigations:
- HB- 7.6g% treated with 2units of Prbc.rest hematological & biochemical values found to be normal
- Xray abdomen erect & CXR - normal



- **USG** – 10*13cm irregular soft tissue lesion with intraluminal echogenic content adjacent to stomach prabably exophytic gastric malignancy.

- **UGISCOPY-** Stomach shows pale mucosa and rugosities lost
- **CECT Abdomen And Pelvis-** Heterogeneously enhancing solid cystic lesion 19*12*13cm posterior to stomach, anterior to pancreas , left kidney and spleen and lesion displacing the stomach to right side. – probably lesion arising from lesser sac- GIST Stomach
- **CT Chest-** Bilateral focal pleural thickening R>l , bilateral lower lobe

Treatment:
- Elective laprotomy with excision of tumour and sleeve gastrectomy.


- Postoperative period uneventful.
- Discharged on pod 8. Wound was healthy
- **HPE:** Sleeve gastrectomy of size 10*9*9cm ,high grade
- **Pathologic Grading:** PT3
- **IHC Reports:**
- CD117&CD 34– POSITIVE
- PATIENT STARTED ON IMATINIB AND ON REGULAR FOLLOW UP.

Case: 2
55year female
1. Pain over left lower abdomen* 20days

H/o loss of appetite*3months
H/o loss of weight*3months

Vitals stable

P/A:
- Soft,tenderness present over left iliac fossa
- No mass Palpable
- Bowel sounds+
- **P/V:** grade 3 uterovaginal prolapse
- **Other Systems:** normal

Investigations:
- HB 6.7g%
- Total count: 9700
- Chest xray normal
- Xray abdomen erect normal
- **USG Abdomen:** left iliac fossa thickened bowel wall with fat stranding
- **CECT Abdomen & Pelvis:** left iliac fossa irregular nodular heterogenous enhancing lesion noted in small bowel loops
- Cystocele with rectocele
- **B/l Kidneys:** mild HUN

Operative Findings:
- Diagnostic Laparoscopy converted to laprotomy
- Intraoperatively, mass lesion of size 5*5cm found adherent to small bowel & sigmoid colon
- Sigmoid colon was resected and anastomosed
- Small bowel 5cm margin given proximally and distally - resection anastomosis done

Follow Up:
- Postoperatively diet started on POD 5
- Discharged on 8th POD
- **HPE Report:** large intestine 8cms in length with large intestine mucosa and submucosa shows a lesion composed of sheets of spindle cells with faintly eosinophilic cytoplasm, elongated nuclei, mild to moderate atypia
- Small intestine 9cmsin length with mucosal ulceration with inflammatory cell infiltrates
- Possibilities, GIST
- Smooth muscle neoplasm
- IHC report
- CD117 positive
- CD34 positive in blood vessels
- K67 - 10%
- Desmin negative
- **Imp:** Gastrointestinal stromal tumour
- Patient has been started on tab. Imatinib
- On regular follow up

Case 3
60 years female
1. Abdominal pain * 6 months
2. Swelling over right upper abdomen
* 1 month
No H/O malena
No H/O vomiting
No H/O obstipation
No H/O abdominal distension
Vitals stable

P/A:
- Soft
- Ill defined mass of size 7*5 cm over the right iliac region
- Mild tenderness + over the mass
- Mobile
- P/ V – normal
- P/ R – yellow fecal staining +
- CECT abdomen & pelvis

Heterogeneously enhancing mass in small bowel with exophytic circumferential bowel wall thickening probably ileum – to r/o GIST.

- Laparotomy proceeded to segmental resection of ileum with ileo ileal anastamosis

Follow Up:
- Pt discharged on POD-8

HPE report
- CD117 positive
- CD34 positive
- K67 - 20%
- Desmin negative
- Imp: Gastrointestinal stromal tumour

Case 4
60 year female
1. Abdominal pain for 10 days

H/O vague abdominal pain for 10 days
- H/O loss of appetite +
- H/O abdominal distension +
- No H/O melena /hematemesis
- NoH/O hematochezia
- Vitals stable

P/A:
A mass of size 8×8 cm over right lower quadrant ,lower border palpable

Tenderness over mass +

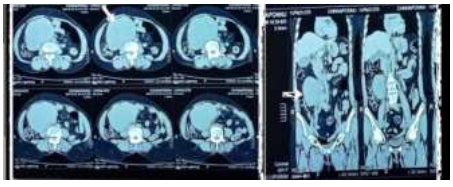
Bowel sounds +

DRE: Yellow fecal staining +

P/V: Fornices free

Investigations:
- Hb:11.2
- TC:8.7
- Urea:14
- Creat:0.9

- **USG Abdomen:** Heterogeneous hypoechoeic solid mass over right side of abdomen ,right to IVC ? Retro peritoneal mass
- **CECT Abdomen & pelvis:** Heterogenous lobulated mass lesion asrising from mesentry –?Mesentric GIST with right ureter infiltration
- Preoperatively Right DJ stenting done by Urology team



- A mass of size 20×15 cm arising from root of mesentry near third part of duodenum is found
- Right ureter found in the medial size of the tumor
- Entire tumor along with the capsule removed

- Pt discharged on POD-10 after DJ stent removal
- Pt started on IMATINIB
- On regular follow up

Case -5
46 year female
1. Abdominal pain for past 10 days
- vague abdominal pain
- Associated with non-bilious vomiting
- Loss of appetite +
- No H/O melena
- No H/O hematenesis/haematochezia
- Vitals Stable

Investigations
Hb:10g/dl
TC:7.4
Urea:32
Creat:0.8

- **USG –** Mass arising from the greater curvature of stomach –

Possibly Malignancy
- CECT abdomen & pelvis:

Mass arising from the greater curvature of stomach infiltrating transverse mesocolon, anterior surface of pancreas

- Mass arising from the posterior surface of stomach
- Communicating fistula into the gastric mucosa
- Infiltrating the anterior surface of pancreas
- Infiltrating the anterior surface of transverse mesocolon in the lesser sac
- Laparotomy proceeded to Subtotal gastrectomy with posterior gastrojejunostomy with segmental resection of transverse mesocolon with colo-colic anastamosis
- Postoperative period uneventful
- Orals started on POD -5

RESULTS
- From november 2022 to October 2024, 5 patients with diagnosis of GIST were found. The median age was 56.5 years. Of 5 patients , all were females.
- Regarding clinical presentation, abdominal pain was the most reported symptom.
- According to the location the most frequent site was stomach.
- Concerning tumor size, the largest was 19*12cm and smallest lesion was 4*3cm.
- Surgery was done in all 5 cases - laprotomy proceeded to resection of GIST with anastomosis.
- Regarding histological findings , 3 were found as high grade and 2 as low grade. All 5 were found to be CD117 positive and 3 were CD 34 positive
- Imatinib was started in all 5 cases as adjuvant treatment. Patient were followed up for past 10 months and alive.

DISCUSSION
Clinical manifestations vary widely. 70 patients present with symptoms, 20% asymptomatic and another 10% in autopsy. According to some series th most frequent manifestation was gastrointestinal bleeding (45%), followed by abdominal pain (30%). In this series, 100% symptoms, abdominal pain was the most frequent in 3 patients, followed by mass in 1 patient and as subacute intestinal obstruction in 1 patient.

With respect tonsize, largest size was 19*12cm, and the smallest was 4*3cm. Symptoms are highly dependent on size. Tumors larger than 6cm are usually symptomatic while lesions smaller than 2cm are indolent.Regarding location, in this series stomach the dominant site with 40% followed by small intestine 20%, large intestine 20% and mesentery 20%.

GISTs have variable and unpredictable biological behaviour, while larger lesions are more aggressive however it appears that any gastric lesion has the potential to be malignant. For this reason, surgical resection is the recommendation once they are diagnosed. Gastric lesions have a more favorable prognosis compared to lesions in other locations.

GIST proliferation is the result of mutation in the KIT proto oncogene receptor tyrosine kinasein 80%, or in platelet derived growth factor in 10%.

Another 10% corresponds to mutations in BRAF.

They all express CD117 and C KIT positivity. Approximately 5% of these tumors may be C KIT negative, CD 34 positive in 60-70% cases, SM positive in 30-40% cases, S100 positive in 5%.

DOG 1 may be useful in C KIT negative GIST.

Depending on the location of lesion and size, type of surgical treatment is indicated. The aim is t achieve complete resection of lesion with negative margins. It is critically rupture the pseudocapsule of tumor because of risk of dissemination which results in poor prognosis.Depending on location of lesion and its size, type of surgical management is indicated. Wide or wedge resection are preferred for most lesions but sometimes partial, subtotal or total gastrectomies should be considered. Some guidelines suggest that laproscopic management is preferred for lesions less than 5cm. In this study, 2 patients underwent sleeve and subtotal gastrectomy, rest 3 underwent segmental resection with anastomosis.

CONCLUSION:

Of 5 cases studied over 1period , all were treated with open surgey. The most frequent location was stomach with 2cases. Abdominal pain and abdominal mass were the most relevant symptoms. The most relevant concepts related to GIST and its management were reviewed.

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