Original Research Paper

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"Analytic study of gastrointestinal tumours."

General Surgery

KEYWORDS: GISTs, Abdominal lump, hematemesis, Cajal's cells, Treatment.

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ABSTRACT

Background: GIST was introduced as a diagnostic term in 1983[1]. Until the late 1990s, many non-epithelial tumours of the gastrointestinal tract were called "gastrointestinal stromal tumours." GISTs are a subset of mesenchymal tumours; represent the most common mesenchymal neoplasm of GI tract. [6]

Aims and Objectives: To study the various location of the GIST at various parts of GI tract.

Introduction: Gastrointestinal tumours are most common mesenchymal neoplasms of the gastrointestinal tract. GISTs arise in the smooth muscle pacemaker intestinal cell of Cajal (ICC)[1]. GISTs occur in the stomach and small intestine with rare occurrence in the rectum (5%), colon (1%), oesophagus and appendix. The diagnosis of GIST is currently based on morphologic features and immune-histochemical demonstration of KIT (CD 117)[2].

Material and method: This study was performed in January 2015 to December 2016 at Dhiraj General Hospital Vadodara.

Discussion: GISTs occurs in the entire gastrointestinal tract, A great majority of them occurs in the stomach (60 – 70 %), small intestine (25 – 35 %), with rare occurrence in the colon(1%) and rectum (5%), oesophagus (<2%) and appendix. They are rarely found in omentum and mesentery. GISTs are characterised by various symptoms abdominal pain, nausea, vomiting, GI bleeding and lump in abdomen [2].

Results: Male predominance was found in this study. Diagnosis was made based on clinical findings, ultrasonography, CT scan of abdomen, and based on intra-operative findings and postoperative histopathological and immunohistochemistry findings. It is estimated that incidence of GISTs is approximately 10 – 20 per million peoples, per year. **Conclusion:** This study shows male predominance, out of seven cases there were six male and one female patient. CT scan is ideal in defining endoluminal and exophytic extent of the tumours. The clinical presentation of GIST is variable but the most usual symptoms include the presence of mass or bleeding. Surgical resection of the local disease is the mainstay therapy.

Introduction:

Gastro intestinal stromal tumors are described as tumours of mesenchymal origin that develop within the wall of the gastrointestinal tract. These tumours start in very early forms of special cells found in the wall of the GI tract, called the interstitial cells of Cajal[1]. Icc are cells of the autonomic nervous system, the part of the nervous system that regulates body process such as digesting food. Icc sometimes called the "pacemakers" of the GI tract because they signal the muscles in the digestive system to contract to move food and liquid through the GI tract. GIST occurs most commonly in stomach, but it can also occur in intestine and anywhere along the GI tract. There are some places where GIST can occur rarely like omentum and peritoneum. Most commonly found in the stomach 60 – 70 % and small intestine 25 – 30 %. Diagnosis of GIST is currently based on morphologic features and immunohistochemical demonstration of KIT (CD 117). However, some tumours (approximately 4%) have clinicopathological features of GIST but do not express KIT. Gastrointestinal stromal tumours are most common in neurofibromatosis type 1 is most commonly present in small intestine. GIST are associated with an abnormal c – Kit pathway [2]. Complete surgical resection is the most important means of cure for GISTs [4]. Imitanib has proven to be effective in metastatic GIST and is also under investigation as a neoadjuvant and adjuvant therapy. [5] Most GISTs are well- circumscribed lesions arising within the wall of the stomach or intestine. They typically exhibit a tan-white, fleshy cut-surface with foci of cystic degeneration, hemorrhage, or necrosis. Large tumours may show ulceration of the overlying mucosa. Microscopically, most GISTs demonstrate 3 main histologic subtypes: spindle cell type (most common), epithelioid type and mixed spindle and epithelioid type. Spindle cell GISTs account for nearly 70% of cases and are composed of cells arranged in short fascicles and whorls. Epithelioid GISTs accounts for approximately 20% of cases and are characterised by rounded cells arranged in nests or sheets, with variable eosinophilic to clear cytoplasm and vesicular nuclei. Approximately 10% of GISTs show a combination of both epithelioid and spindle cells.

Material and method:

This study has been conducted between January 2015 and December 2016, at Dhiraj General Hospital, Sumandeep Vidyapeeth, Vadodara, and Gujarat. Patients included in this study were those who had Gastro intestinal stromal tumour. Patients coming to the outpatient department who had lump in abdomen and pain were examined and routine work up done.

Results:

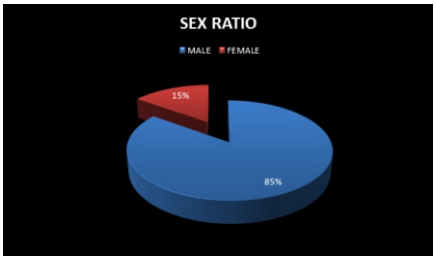
GIST can occur in the anywhere in gastrointestinal tract and are the most common mesenchymal tumours of the GI tract 9 – 10. They range from small benign tumours to sarcomas at all sites of occurrence. The incidence of GISTs is estimated to be approximately 10 – 20 per million people, per year. Malignancy possibility is 20 – 30 (7-9). Over 90% of GISTs occur in adults over 40 years old, however GIST cases have been reported in all ages, including children. The incidence between the sexes is the same, although the study reported that there is a predominance of males[8]. A great majority of them occur in the stomach (60 – 70%) and small intestine (25 – 35%) with rare occurrence in the colon and rectum (5%), oesophagus (>2%) and appendix. Some GISTs are primary in the omentum, mesentery or retro peritoneum and are unrelated to the tubular GI tract. GISTs are characterised by various symptoms abdominal pain, nausea, vomiting, GI bleeding, lump in abdomen. GIST can be histologically identified as highly cellular spindle cell or epitheloid mesenchymal tumors and morphology is somewhat site dependent. [2] In the past, these tumours were presumed to have elements of smooth muscle (smooth muscle origin), so they were classified as leiomyomas, leiomyosarcomas and leioblastomas [6]. The clinical presentation of GIST is erratic. Only 70 % of the patients are symptomatic, while 20% are asymptomatic and 10% detected at autopsy[7-8]. Common findings is abdominal mass, but some patients may have vague symptoms, like nausea, vomiting, abdominal discomfort, weight loss or early satiety. Rupture of GISTs into the peritoneal cavity is rare and causes life threatening intraperitoneal hemorrhage [9]. Adjuvant and neoadjuvant therapy can be given in case of high risk gastro intestinal stromal tumour. But surgical management is the best choice of management in case of gastro intestinal stromal; tumour. Gist can be diagnosed by CT scan, immunohistochemistry and based on various clinical symptoms. Some clinical symptoms are common and hence above mentioned investigations help us to confirm the

diagnosis.

TABLE 1: DETAILS OF ALL PATIENTS

NAME	AGE	SEX	IPDNO	HPR NO	COMPLAIN	ORGAN INVOLVED	IMMUNOHISTOCHEMISTRY
PREMBAI BHILALA	50	F	I16093 00127	5249 /16	PAIN IN ABDOMEN,NAUSEA, VOMITING	STOMACH	Cd117 POSTIVE
MAKAMBHAI	65	M	I13122 40081	39/14	PAIN IN ABDOMEN, ABDOMINAL DISTENTION	STOMACH	CD117 POSTIVE
SALAM KAZI	57	M	I15051 500035	2269 /15	PAIN IN ABDOMEN, REGURGITATION	JEJUNUM	CD117 POSTIVE
MAHESH CHAUDHARY	40	M	I15010 70086	76/15	PAIN IN ABDOMEN,VOMITING, ABDOMINAL DISTENTION	STOMACH	CD117 POSTIVE
GANPATBHAI BARIYA	50	M	I16071 20086	3637 /16	PAIN IN ABDOMEN, FEVER, VOMITING	ILEUM	CD117 POSTIVE
HAZIBHAI DUDHWALA	75	M	I15050 40`97	2163 /15	PAIN IN ABDOMEN, CONTIPATION, VOMITING	STOMACH	CD117 POSTIVE
MANOHAR KAHAR	32	M	I17012 00106	378/ 17	PAIN IN ABDOMEN,	STOMACH	CD117 POSTIVE

TABLE 2: SEX RATIO:

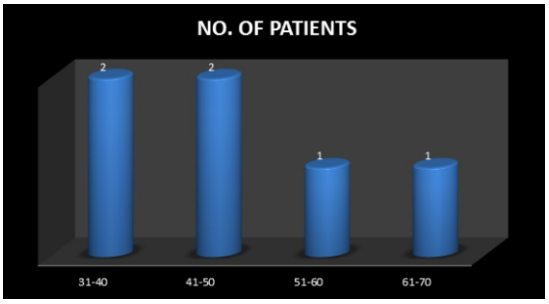


SEX	NO OF PATIENTS	PERCENTAGE
MALE	6	85%
FEMALE	1	15%

Present study shows male preponderance around 85% and female 15%.

TABLE 3: AGE GROUP:

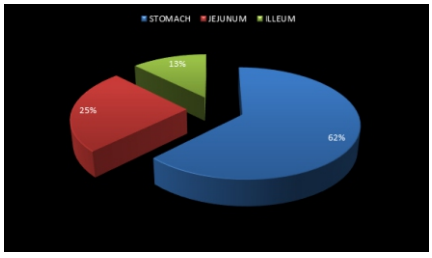
AGE GROUP	NO OF PATIENT	PERCENTAGE
31-40	2	35
41-50	2	35
51-60	1	15
61-70	1	15



In present study GISTs are most in age group 31 – 40 years i.e. 35 %, and 41 – 50 years i.e. 35 %. In age group 51 – 60 and 61 – 70 only 15 % involvement is seen.

TABLE: 4 ORGANS INVOLVED:

ORGAN INVOLVED	NO OF PATIENT	PERCENTAGE
STOMACH	5	70
JEJUNUM	1	15
ILLEUM	1	15

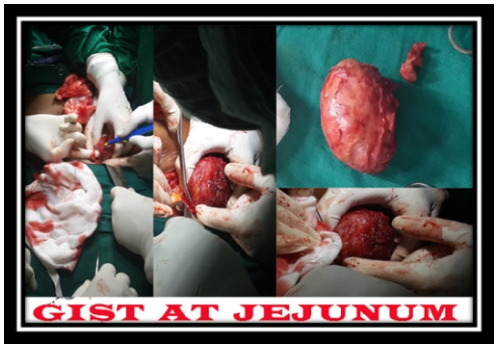


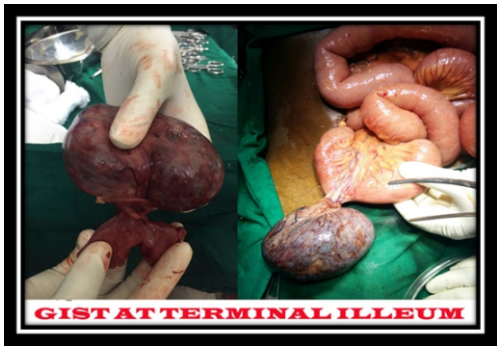
In present study stomach is most commonly involved organ (70%) while involvement of other organs like jejunum and ileum is 15% respectively.(figure 1 and 2)

GIST which can't be removed completely with surgery or which has spread can also be treated with biological therapies using various drugs called Glivec (Imatinib). Glivac acts by blocking chemical (an enzyme) that the cancer needs to grow due to its tyrosin kinase inhibitor property. Glivec works well if GIST cells are CD 117 positive. But it can even work in CD 117 negative cells also. Glivec is available in form of tablet so no need to hospitalise the patient. It is given in a dose of 400 mg a day for 12 weeks. Glivec is also useful in highrisk tumours which are having chances of recurrence. In such cases Glivec can be given for three years also.

Europe a drug called Sunitinib (Sutent) has been used to trat GIST if Glivec doesn't work or stop working. Sunitinib is also used in patients who can not tolerate the side effects of Glivec.

In patient who had treatment with Glivec and sunutinib that has not worked or caused severe side effects can be treated with a drug called Regorafenib (Stivarga). This drug is also used in patients with advanced spread or inoperable disease.





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DISCUSSION:

Diagnosis of the study was made based on clinical findings, ultrasonography, CT scan abdomen, intra-operative and postoperative histopathological findings.[4] Pain in abdomen, lump in abdomen, and rectal bleeding in case of rectal GIST, and whereas gastric lump for gastric GIST, generalised weakness were some common symptoms seen in GIST patients. Study was done on seven patients who met the inclusion criteria, which showed the prognosis of patients with GISTs and its location at different sites in the gastrointestinal tract. Histopathology in seven patients revealed various locations where GIST can occur, revealed that stomach mucosa had hyper cellular lamina propria, another deeper tissue of stomach showed spindle cells with plump nuclei arranged in fascicular pattern, some cells show cytoplasmic vacuolation, a section of jejunum showed presence of spindle cell with focal epitheloid appearance, the cells are seen in fascicular and whorled pattern. There was a mild to moderate pleomorphism. A part of ileum where it showed few peripheral areas which had spindle cells arranged in fascicles, no epithelial tissue was noted. Immunohistochemistry showed presence of CD117, CD 34, and Vimentin[2]. Ct scan revealed exophytic, cavitatory, mild to moderately enhancing growth [4].

CONCLUSSION:

This study shows male predominance, out of seven cases there were six male and one female patient. CT scan is ideal in defining endoluminal and exophytic extent of the tumours. The clinical presentation of GIST is variable but the most usual symptoms include the presence of mass or bleeding. Surgical resection of the local disease is the gold standard therapy. Study shows that stoch is the most commonly involved organ (70%) and jejunum and ileum 15% respectively.

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