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Clinicopathological Study of Gastrointestinal Stromal Tumour in a Tertiary Care Center

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Abstract

Gastrointestinal stromal tumours (GIST) are rare tumours of gastrointestinal tract arising from the interstitial cells of Cajal. They present with varied clinical features most of them are non specific. The aim of the sudy is to identify the clinical features of GIST and immunohistochemistry. It is a retrospective study done at Sri Ramachandra Institute of Higher Education and Research from 1st Jan 2015 to 31st Oct 2018 who had GIST confirmed by histopathology analysis, with total number of patients was 20. No gender differences . Abdomen pain and abdomen fullness were the main presenting complaints. In our study , Small bowel was the most common site and second most common site is stomach. The average size of tumour was approximately 10 cm. Almost all GIST were CD117 and DOG1 positive.

Introduction

Gastrointestinal Stromal Tumours (GISTs) are a heterogenous group of mesenchymal tumours that arise from the gastrointestinal tract [1] . Earlier these tumours were termed as leiomyomas, leiomyosarcoma and leiomyoblastomas [2] . They have been called by several names such as STUMP (smooth muscle tumours of uncertain malignant potential) or GANT (gastrointestinal autonomic nerve tumours) or GIPACT (gastrointestinal pacemaker cell tumours) in the past. In 1983, Mazur and Clark coined the term GIST. It is used for those tumours which encompassed non-epithelial origin neoplasms of gastrointestinal tract, which lacked the immunohistochemical features of Schwann cells and did not have the ultra-structure of smooth muscle cells [3] . GIST are commonly derived from the interstitial cells of Cajal, (gut pacemaker). They create the basal electrical rhythm leading to peristalsis in GIT [4] . GIST were driven by oncogenic activation of KIT or platelet derived growth factor receptor alpha (PDGFRA). GISTs occur mainly in adult population , about 60 % of which are located in stomach and very rarely in children . Small intestine GISTs are said to account for about 30 % of all GISTs with specified location and jejunum is more frequently involved than ileum. GISTs can develop outside the intestinal tract in the omentum , mesentry , uterus , and the retroperitoneum . They are called Extra – GISTs [5 , 7 , 8]. Stomach is most common site followed by small bowel and colo-rectum..Tumor size less than 2 cm are usually found in radiological investigations only. Most GIST are asymptomatic, may present with vague abdominal pain, abdominal distension, abdominal mass or with

hematemesis in case of ulceration [6] . A few patients with GIST may present to the casualty with intestinal obstruction or hemodynamic instability and spontaneous hemoperitoneum due to tumor rupture in peritoneal cavity. Malignant GIST may present with metastasis and dissemination within the abdomen. Histopathologically, GISTs are usually sharp rounded mass lesions in submucosal layer and mainly three types spindle cell, epitheliod type and mixed type. Typical GISTs are positive for CD117 and other markers are DOG1 , VIMENTIN and PDGFRA.

Aim of the Study: To analyse the clinicopathological characteristics and prognostic factors of gastrointestinal stromal tumors.

Keyword: Gastrointestinal stromal tumors, tyrosine kinase, autonomic nerve tumours

Materials And Methods: It is a retrospective study of all individual treated at Sri Ramachandra Institute of Higher Education and Research from 1st Jan 2015 to 31st Oct 2018 who had GIST confirmed by histopathology analysis.

Results: In our study population, total number of cases were 20. Incidence was more between 50-60 age group (50%). In 20 cases, 14 were male (70%) and 6 were female (30%) with slight male preponderance. In these cases, 19 cases were symptomatic and one case is asymptomatic. The most common presentation was abdomen pain and abdomen fullness (90%) and one case present with gastrointestinal bleeding (5%) and one case asymptomatic (5%)

Twenty cases were isolated and were proven as GIST with tissue biopsy using endoscopy or Image guided FNAC. In our study population, GIST was reported in 6 cases in stomach, 11 cases in small bowel and 3 cases in large bowel. Most common site is Small bowel in our study . All patients diagnosed with GIST underwent excision of tumour followed by Resection and anastomosis. Postoperatively, tumor was confirmed by histopathological examination and immunohistochemistry. Most common histopathological type was Spindle cell type of GIST (13 cases) , mixed type was noted in (6 cases) and epitheliod type in (1case). Almost all cases were CD117 and DOG1 positive (20 cases) and only one case is PDGFRA also positive. The gross tumor size was less than 5 cm in (5 cases) and between 5 cm to 10 cm in (4 cases) and more than 10 cm in (11 cases) were reported. Tumors with mitotic index less than 5/50HPF noted in 10 cases and are low grade tumors and tumors with mitotic index more than 5/50HPF noted in 10 cases and are reported as high grade tumors.

Discussion

In this study, we identified 20 patients with Gastrointestinal stromal tumors (GIST). GIST more commonly occurs in elderly age group. In our study, the mean age group interval was 50-60 years which was similar to Antonescu et al[9] study. Lopes et al[10] stated that incidence is equal in both sexes but in our study there was slight male predominace.

The most common presentation was gastrointestinal bleeding according to Chayanit et al [11]study but in our study the most common one was abdomen pain and abdomen fullness. The most common location was the stomach in all reported studies followed by small bowel, colorectal, and the esophagus. But in our study the most common location was small bowel followed by stomach and large bowel similar to Bhalgami et al[12].

In 1998, Hirota et al[13] showed the existence of mutation in GIST and described that KIT mutation stains positive for almost 60-80%. Almost all cases are positive for CD117 similar to our study and some of them also shows positivity for PDGFRA. In the histopathological findings we found that all are predominantly spindle cell type followed by mixed type and epitheliod type. These

observations were similar to the studies of Trupiano et al[14] , Din et al[15] and Kang et al[16]. Tumor size by itself does not predict its biological behavior, the mitotic index, tumor size and site are important to predict the progression risk ratio as described by Miettien and Lasota et al[17]. GIST varies in size and in our study most tumor were more than 10 cm , as report in Li et al [18]and Antonescu et al. Tumors larger than 10 cm were found correlated with metastasis which agrees with the study of Miettien et al who found that there is increased chance of metastasis when tumor size increases and high mitotic counts were found to be related with metastasis and are the most important prognostic indicators with tumor size.

Conclusion

GISTs are the most common mesenchymal tumour of the gut. Gastrointestinal bleeding , Abdomen pain and abdomen fullness are the predominant complaints. Stomach is the most commonly involved organ followed by small bowel and colon. Final diagnosis is made on the basis of characteristic histologic patterns and immunohistochemistry. Surgery is the mainstay treatment in localized GIST , although the percentage of relapse is not low even after radical surgery. Prognosis is strictly related to size and completeness of surgical resection. We strongly suggest all patients with GIST to be carefully and regularly followed up for an indefinite period.

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