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# CLINICAL PROFILE OF PATIENTS WITH GIST IN NORTHERN KERALA – A RECORD-BASED OBSERVATIONAL STUDY

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**ABSTRACT** **Introduction:** There is an increase in the incidence of gastrointestinal stromal tumours over the last decade. But there is a lacunae in the literature generated on the topic from south India. The current study was done with the objective of documenting the clinical and pathological profile of patients with gastrointestinal stromal tumours at a tertiary care centre in Kerala. **Methodology:** It was a record-based study conducted at a tertiary care centre in northern Kerala. All patients who were operated for GIST and associated complications in the centre during the time period between January 2016 and December 2019 were considered for analysis. **Results:** Of the 51 cases admitted during the study period, more than 50% of cases occurred above 60 years of age. Around 60% of the cases were recorded in women. Malena and pain abdomen were the most common symptoms. Stomach GIST was the most common histopathological variant, followed by small bowel GIST. **Conclusion:** The demography of GIST in Kerala seems to be different from that reported in other places in India, especially in relation to gender preponderance. Larger studies may be undertaken in other parts of Kerala to look into repeatability of results.

**KEYWORDS :** Gastrointestinal stromal tumours, epidemiology, India, signs and symptoms

## INTRODUCTION

Gastro-intestinal stromal tumours (GIST) are the most common mesenchymal tumours of the gut, constituting more than 50%, even though they are less than 1% of gastro-intestinal cancers overall.[1,2] The epidemiology varies from place to place, but has been recorded to be 4.2 per 10 million in the United States.[3]

Many studies have recorded an increase in the incidence of GIST internationally.[4] This is also reflected in India. An increase in the incidence of GIST has been recorded in a sentinel hospital in West Bengal, compared to previous years.[5] The incidence was recorded to be 2.48% in 2018-19, which was 85% higher than the incidence of 0.37% recorded 10 years before.[5] Historically, GIST were subject to controversies regarding its histopathology, diagnosis and nomenclature.[6] As a result, these were classified along with other tumours, like leiomyomas or leimyosarcomas.[7]

It was Mazur and Clark who coined the term 'stromal tumour' in 1983 with the understanding that these were a clinicopathologically distinct entity.[8] GISTs are associated less with the smooth muscles of the gut, as earlier postulated and more with the spindle cells in the gut wall, known as the interstitial cells of Cajal. It has since been established that tyrosine kinase receptor (KIT) is strongly expressed in GIST and forms an important part of diagnosis.[7]

A greater awareness about these tumours as well as better classification techniques could be one reason for the recent trend of increasing numbers.[9] This increasing incidence has been reflected also by an increase in publications related to GIST in recent years.

There is still a lacuna in the literature related to GIST from Kerala. Therefore, the current study was done with the objective of documenting the clinical and pathological profile of patients with gastrointestinal stromal tumours at a tertiary care centre in Kerala, including distribution by age, gender, symptoms and histopathology.

## MATERIALS AND METHODS

It was a record-based cross-sectional analytical study conducted at a government-run tertiary care centre in northern Kerala, India. Patients were recruited from the department of General Surgery and details regarding histopathology were collected from the Department of Pathology. All patients who were operated for GIST and associated complications in the centre during the time period between January 2016 and December 2019 were recruited into the study. Incomplete case records or those without histopathological reports were excluded. All eligible cases in the study period were taken for analysis. As it was a record-based study with de-identified data, there was no process of informed consent. The study was approved by the Institute Ethical Committee of Government Medical College, Calicut.

### *Statistical Analysis*

Data was entered into Microsoft Excel and analysed using Statistical Package for the Social Sciences version 22.0 and R environment version 3.2.2. Age was summarised as mean along with standard deviation and also categorised into 10-year intervals. All categorical variables were summarised as proportions along with 95% confidence interval. Association between two categorical variables was studied using Fischer exact test. A p value of less than 0.05 was considered statistically significant.

## RESULTS

A total of 51 records were found to be complete and eligible for analysis. The socio-demographic details of the cases are given in Table 1. The mean (SD) age of patients was 60.6 (12.5) years. More than 50% of cases occurred above 60 years of age. Around 60% of the cases were recorded in women. Table 2 shows the distribution of participants by presenting symptoms and histo-pathological report. Malena and pain abdomen were the most common symptoms. Stomach GIST was the most common histopathological variant, followed by small bowel GIST.

Table 3 shows the association between clinical features and socio-demographic characteristics. There was no significant association between presenting features and age or sex of the participants. Two surgical specimens are shown in Figures 1 and 2.

**Table 1: Socio-demographic characteristics of the study population (N=51)**

| Variable | Number of participants, n | Percentage (%) |
|---|---|---|
| **Age (in years)** | | |
| <40 | 3 | 5.9 |
| 40 – 50 | 8 | 15.7 |
| 51 – 60 | 12 | 23.5 |
| 61 – 70 | 18 | 35.3 |
| >70 | 10 | 19.6 |
| **Sex** | | |
| Male | 20 | 39.2 |
| Female | 31 | 60.8 |

**Table 2: Distribution of study participants by clinical characteristics (N=51)**

| Variable | Number of participants | Percentage (%) |
|---|---|---|
| **Presenting Symptoms** | | |
| Malena | 17 | 33.3 |
| Pain abdomen | 14 | 27.5 |
| Anemia, fatigue, weight loss | 11 | 21.6 |
| Hematemesis, pain abdomen | 8 | 15.7 |
| Vomiting, weight loss | 1 | 2.0 |
| **Histo-pathological Report** | | |
| Stomach GIST | 25 | 48.9 |

| | | |
|---|---|---|
| Small Bowel GIST | 19 | 37.4 |
| Mesenteric GIST | 5 | 8.8 |
| Caecal GIST | 2 | 4.8 |

**Table 3: Association between socio-demographic characteristics and symptom presentation in GIST (N=51)**

| Variable | Symptom at Presentation, n (%) | | | | | P value * |
|---|---|---|---|---|---|---|
| | Malena, pain abdomen (n=17) | Pain abdomen (n=14) | Anaemia, fatigue, weight loss (n=11) | Hematemesis, pain abdomen (n=8) | Vomiting, anaemia, weight loss (n=1) | |
| **Age category (in years)** | | | | | | |
| <40 | 1 (25.0) | 2 (50.0) | 0 (0) | 1 (25.0) | 0 (0) | 0.378 |
| 40 – 50 | 1 (14.3) | 3 (42.9) | 1 (14.3) | 2 (28.6) | 7 (100) | |
| 51 – 60 | 7 (58.3) | 1 (8.3) | 3 (25.0) | 1 (8.3) | 0 (0) | |
| 61 – 70 | 3 (16.7) | 5 (27.8) | 5 (27.8) | 4 (22.2) | 1 (5.6) | |
| >70 | 5 (50.0) | 3 (30.0) | 2 (20.0) | 0 (0) | 0 (0) | |
| **Sex** | | | | | | |
| Female | 8 (25.8) | 10 (32.3) | 8 (25.8) | 5 (16.1) | 0 (0) | 0.400 |
| Male | 9 (45.0) | 4 (20.0) | 3 (15.0) | 3 (15.0) | 20 (100) | |

*Fischer exact test

**Figure 1: Jejunal Gastro-intestinal Stromal Tumour**

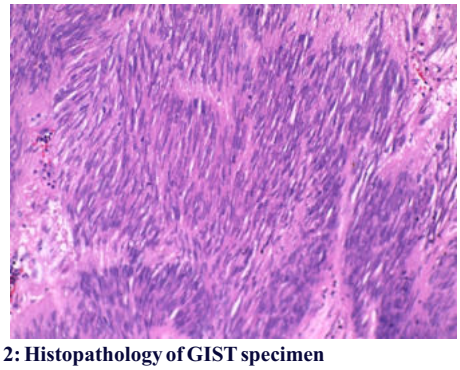

**Figure 2: Histopathology of GIST specimen**

## DISCUSSION

The current study found that majority of persons affected by GIST seemed to be women and above 60 years of age. There is conflicting evidence on the gender distribution of GIST across different studies. A near equal incidence of GIST in both men and women was reported by Gupta et al. and Coe et al. [3,10] The only studies that reported an increased incidence among women were Reith et al. and Varshney et al, of which the latter had a proportion similar to the current study. [11,12] All other studies report a higher incidence among men, even as high as 3 times, as seen in a study in South India.2 Similar to the current study, the majority of cases in all previous literature were recorded in those above 40 years of age. But the most common age group was 50 – 59 in almost all cases, even among South Indian data. [13] The mean age was reported to be between 50 and 52 by many studies. [5,10,14,15] The higher representation of older age groups in Kerala needs to be further studied.

Malena and pain abdomen were the predominant symptoms in the current study. The presentation of GIST is expected to differ based on the parts affected. [12] In all intestinal tumours, bleeding and lump/pain were found to be the main symptoms across all studies, while extra-intestinal tumours presented without bleeding. Weight loss has also been recorded as a prominent symptom by many studies, with vomiting being found in a minority of participants. [10,13,16] The overall profile of symptoms found in the current study is coherent with the existing literature.

The main parts affected are stomach, followed by small intestine and mesentery. Stomach and small bowels were common locations in every study, with stomach being the most common in the majority, similar to the current study. [12-14,17] The distribution of cases in the current study was largely similar to the one done by Sreemulu et al in Karnataka. [18]

No significant association was found between demographic characteristics and clinical features. This might also be due to the smaller sample in the current study.

The study has several strengths. It is one of the few studies documenting the clinical profile of GIST cases in Kerala. As all eligible cases were consecutively taken into the study, there was no sampling bias. The limitations of the study were that it was a single centre study, and that detailed review of cases could not be done due to the retrospective record-based methodology.

## CONCLUSION

GISTs are relatively unpredictable tumours with a variety of presentation. Common sites are seen to be stomach and small intestine, with most of the latter being of jejunal origin. The demography of GIST in Kerala seems to be different from that reported in other places in India, especially in relation to gender preponderance. Further multi-centric research may be undertaken to study the clinic-pathological factors in detail.

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