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ORIGINAL ARTICLE

Gastrointestinal Stromal Tumor in Patients Presenting to Khyber Teaching Hospital, Peshawar

MUHAMMAD AYAZ[1], MUHAMMAD NAEEM KHATTAK[2], YOUSAF TAHIR[3], MUNIR AHMAD[4], AAMIR KHAN[5], MAIRA RIAZ[6]
[1,3]*Post Graduate Resident, Khyber Teaching Hospital Peshawar*
[2]*Associate Professor of Surgery, Department of Surgery, Khyber Teaching Hospital Peshawar*
[4]*Assistant Professor, Department of Surgery, Khyber Teaching Hospital Peshawar*
[5]*Resident Surgeon, Khyber Teaching Hospital Peshawar*
[6]*Training Medical Officer, Second Year, Department of Surgical D Ward, Khyber Teaching Hospital Peshawar*
Corresponding author: Munir Ahmad, Email: drmunir29@gmail.com

ABSTRACT

Objective: To determine the frequency of presentations of gastrointestinal stromal tumor in patients presenting to Khyber Teaching Hospital, Peshawar.

Study Design: Descriptive Cross Sectional

Place and Duration of study: Department of General Surgery, MTI-KTH Peshawar. From 1st November, 2020 to 30 April, 2021.

Methods: All patients were evaluated for their presentations (Abdominal Pain, Abdominal mass, Vomiting, Anemia, Weight loss and Hematemesis as per operational definition. All this data was noted and recorded on especially designed proforma.

Results: As per frequencies and percentages for variable presentation, 42 (59.2%) patients had abdominal pain, 38 (53.5%) patients had abdominal mass, 36 (50.7%) patients had vomiting, 31 (43.7%) patients had anemia, 22 (31.0%) patients had weight loss while 11 (15.5%) patients had hematemesis.

Conclusion: Our study demonstrated abdominal pain as the most common presentation of gastrointestinal stromal tumor in our local population as local evidence which was followed by abdominal mass and vomiting.

Keywords: Abdominal Pain, Gastrointestinal Stromal Tumor, Vomiting

INTRODUCTION

One of the most common mesenchymal neoplasms of the gastrointestinal tract (GIT), gastrointestinal stromal tumors attributing for 0.1 to 3% of all the gastrointestinal malignancies[1]. Their origin lies in being developed from a specialized array of cells in the present in the walls of the GIT called the interstitial cells of Cajal (ICCs). Most of these tumors are benign and approximately 30% are malignant[2]. More than half of these tumors are found in the stomach (60%) followed by the small intestine (20% to 30%)[3]. A minimal percentage of these tumors are found outside the GI tract such as the omentum, peritoneum, mesentery and the retroperitoneum. GISTs were initially identified as smooth muscle tumors, but advancements in immunohistochemistry and genetic studies over the past 20 years have led to the identification of GISTs as a distinct entity[4].

GISTs can occur at any age; however, most commonly are diagnosed later in life, with a median age of diagnosis in the 60s[5-10]. Population-based studies from European countries in addition to SEER (Surveillance, Epidemiology, and End Results)[11] data from the United States indicate an annual incidence rate of 6.5 to 14.5 and an age-adjusted incidence rate of 0.68 to 0.8 per 10,000. Unfortunately, the world-wide incidence of GISTs is not known, given the relative homogeneity of previous population-based studies. Regarding sex, GISTs occur fairly equally amongst both males and females.

Since the advent of advanced immunological studies to detect the expression of the tyrosine kinase KIT receptor, the histopathological diagnosis of a GIST has improved. CD 117 is regarded as the most trustworthy phenotypic indicator for GIST [12]. The preferred form of management has always been surgery. Gastrointestinal stromal tumors have shown a diverse array of clinical presentations among different populations. In a study by Urooj R, et al. results have shown that frequency of Abdominal Pain was 60%, Abdominal mass 50%, Vomiting 40%, Anemia 30%, Weight loss 30% and Hematemesis was 10% in patients with gastrointestinal stromal tumors.[13] Therefore, to get local evidence in KPK population, the following study was planned to determine the frequency of presentations of gastrointestinal stromal tumor in patients presenting to KTH, Peshawar.

MATERIAL AND METHODS

This Cross Sectional Study was conducted at Department of Surgery, KTH, Peshawar. Total 71 sample size was calculated with WHO sample size software using 95% confidence interval, 7% margin of error with expected frequency of hematemesis by 10% in patients with gastrointestinal stromal tumor. [7] Sampling technique: Non-probability Consecutive sampling.

Data Collection Procedure: Patients fulfilling the inclusion criteria from Indoor Department of Surgery, KTH, Peshawar was included in the study after permission from ethical committee. Base line demographic information of patients (age, gender, weight on weighing machine, duration of complain) was taken. Informed consent was taken from patients, ensuring confidentiality and fact that there is no risk involved to the patient while taking part in this study.

All patients were evaluated for their presentations (Abdominal Pain, Abdominal mass, Vomiting, Anemia, Weight loss and Hematemesis as per operational definition. All this data was noted and recorded on especially designed proforma (Annexure-I).

Data Analysis: Data was analyzed using statistical software program (SPSS V. 22). The quantitative variables like age, duration of complain and weight was presented by calculating mean and standard deviation. The categorical variables like gender, abdominal pain, abdominal mass, vomiting, anemia, weight loss and hematemesis was described as frequencies and percentages. Presentations was stratified with age, gender, duration of complain and weight. Post stratification chi square test was applied keeping P value < 0.05 as statistically significant.

RESULTS

This study was conducted at the Department of General Surgery, MTI-Khyber Teaching Hospital, Peshawar and comprehensive results are mentioned Mean and SDs for age was 43.06+12.525. Mean and SDs for duration of complain was 3.59+1.24. Mean and SDs for weight was 77.30+7.977. 29 (40.8%) patients were recorded in 20-40 years age group while 42 (59.2%) patients were recorded in 41-60 years age group. 46 (64.8%) male patients and 25 (35.2%) female patients were recorded. As per frequencies and percentages for variable presentation, 42 (59.2%) patients had abdominal pain, 38 (53.5%) patients had abdominal mass, 36 (50.7%) patients had vomiting, 31 (43.7%) patients had anemia, 22 (31.0%) patients had weight loss while 11 (15.5%) patients had hematemesis. Variable presentations were cross tabulated with age, gender, duration of complain and weight at Table No. 2 to 5 respectively.

Table 1: Descriptive Statistics of Study (n=71)

Numerical Variables	Minimum	Maximum	Mean	Std. Deviation
Age (Years)	23	60	43.06	12.525
Duration of Complain (Days)	2	6	3.59	1.249
Weight (kg)	62	89	77.30	7.977

Table 2: Frequencies and Percentages for Variable Presentations of Gastrointestinal Stromal Tumor (n=71)

Variable Presentations of GISTs	Frequency	Percentage
Abdominal Pain	42	59.2%
Abdominal Mass	38	53.5%
Vomiting	36	50.7%
Anemia	31	43.7%
Weight Loss	22	31.0%
Hematemesis	11	15.5%

Table 3: Stratification of Variable Presentations of Gastrointestinal Stromal Tumor with Age (n=71)

Variable Presentations of GISTs		Age Groups		Total	P Value
		20-40 Years	41-60 Years		
Abdominal Pain	Yes	15	27	42	0.290
		51.7%	64.3%	59.2%	
	No	14	15	29	
		48.3%	35.7%	40.8%	
Total		29	42	71	
		100.0%	100.0%	100.0%	
Abdominal Mass	Yes	18	20	38	0.230
		62.1%	47.6%	53.5%	
	No	11	22	33	
		37.9%	52.4%	46.5%	
Total		29	42	71	
		100.0%	100.0%	100.0%	
Vomiting	Yes	13	23	36	0.411
		44.8%	54.8%	50.7%	
	No	16	19	35	
		55.2%	45.2%	49.3%	
Total		29	42	71	
		100.0%	100.0%	100.0%	
Anemia	Yes	11	20	31	0.418
		37.9%	47.6%	43.7%	
	No	18	22	40	
		62.1%	52.4%	56.3%	
Total		29	42	71	
		100.0%	100.0%	100.0%	
Weight Loss	Yes	9	13	22	0.994
		31.0%	31.0%	31.0%	
	No	20	29	49	
		69.0%	69.0%	69.0%	
Total		29	42	71	
		100.0%	100.0%	100.0%	
Hematemesis	Yes	6	5	11	0.315
		20.7%	11.9%	15.5%	
	No	23	37	60	
		79.3%	88.1%	84.5%	
Total		29	42	71	
		100.0%	100.0%	100.0%	

Table 4: Stratification of Variable Presentations of Gastrointestinal Stromal Tumor with Gender (n=71)

Variable Presentations of GISTs		Gender		Total	P Value
		Male	Female		
Abdominal Pain	Yes	26	16	42	0.540
		56.5%	64.0%	59.2%	
	No	20	9	29	
		43.5%	36.0%	40.8%	
Total		46	25	71	
		100.0%	100.0%	100.0%	
Abdominal Mass	Yes	24	14	38	0.758
		52.2%	56.0%	53.5%	
	No	22	11	33	
		47.8%	44.0%	46.5%	
Total		46	25	71	
		100.0%	100.0%	100.0%	
Vomiting	Yes	23	13	36	0.872
		50.0%	52.0%	50.7%	
	No	23	12	35	
		50.0%	48.0%	49.3%	
Total		46	25	71	
		100.0%	100.0%	100.0%	
Anemia	Yes	19	12	31	0.587
		41.3%	48.0%	43.7%	
	No	27	13	40	
		58.7%	52.0%	56.3%	
Total		46	25	71	
		100.0%	100.0%	100.0%	
Weight Loss	Yes	15	7	22	0.688
		32.6%	28.0%	31.0%	
	No	31	18	49	
		67.4%	72.0%	69.0%	
Total		46	25	71	
		100.0%	100.0%	100.0%	
Hematemesis	Yes	7	4	11	0.931
		15.2%	16.0%	15.5%	
	No	39	21	60	
		84.8%	84.0%	84.5%	
Total		46	25	71	
		100.0%	100.0%	100.0%	

Table 5: Stratification of Variable Presentations of Gastrointestinal Stromal Tumor with Duration of Complaints (n=71)

Variable presentations of GISTs		Duration of Complaints		Total	P Value
		< 3 Days	> 3 Days		
Abdominal Pain	Yes	25	17	42	0.829
		58.1%	60.7%	59.2%	
	No	18	11	29	
		41.9%	39.3%	40.8%	
Total		43	28	71	
		100.0%	100.0%	100.0%	
Abdominal Mass	Yes	21	17	38	0.327
		48.8%	60.7%	53.5%	
	No	22	11	33	
		51.2%	39.3%	46.5%	
Total		43	28	71	
		100.0%	100.0%	100.0%	
Vomiting	Yes	23	13	36	0.561
		53.5%	46.4%	50.7%	
	No	20	15	35	
		46.5%	53.6%	49.3%	
Total		43	28	71	
		100.0%	100.0%	100.0%	
Anemia	Yes	17	14	31	0.385
		39.5%	50.0%	43.7%	
	No	26	14	40	
		60.5%	50.0%	56.3%	
Total		43	28	71	
		100.0%	100.0%	100.0%	
Weight Loss	Yes	14	8	22	0.723
		32.6%	28.6%	31.0%	
	No	29	20	49	
		67.4%	71.4%	69.0%	
Total		43	28	71	
		100.0%	100.0%	100.0%	
Hematemesis	Yes	8	3	11	0.369
		18.6%	10.7%	15.5%	
	No	35	25	60	
		81.4%	89.3%	84.5%	
Total		43	28	71	
		100.0%	100.0%	100.0%	

Table 8: Stratification of Variable Presentations of Gastrointestinal Stromal Tumor with Weight (n=71)

Variable Presentations of GISTs		Weight		Total	P Value
		< 75 kg	> 75 kg		
Abdominal Pain	Yes	15	27	42	0.440
		53.6%	62.8%	59.2%	
	No	13	16	29	
		46.4%	37.2%	40.8%	
Total		28	43	71	
		100.0%	100.0%	100.0%	
Abdominal Mass	Yes	15	23	38	0.995
		53.6%	53.5%	53.5%	
	No	13	20	33	
		46.4%	46.5%	46.5%	
Total		28	43	71	
		100.0%	100.0%	100.0%	
Vomiting	Yes	13	23	36	0.561
		46.4%	53.5%	50.7%	
	No	15	20	35	
		53.6%	46.5%	49.3%	
Total		28	43	71	

		100.0%	100.0%	100.0%	
Anemia	Yes	12	19	31	0.912
		42.9%	44.2%	43.7%	
	No	16	24	40	
		57.1%	55.8%	56.3%	
Total		28	43	71	
		100.0%	100.0%	100.0%	
Hematemesis	Yes	5	6	11	0.657
		17.9%	14.0%	15.5%	
	No	23	37	60	
		82.1%	86.0%	84.5%	
Total		28	43	71	
		100.0%	100.0%	100.0%	

DISCUSSION

In the present study, mean and SDs for age was 43.06+12.525., for duration of complain was 3.59+1.24 and for weight was 77.30+7.977. (Table No. 1) which was consistent with the findings of Nishida T[3] who also recorded same parameters of age, duration of complain and weight of patients. This may be due to the fact that GIST is variable just like its presentation and can occur at any stage of life. However, as per our age groups, 29 (40.8%) patients were recorded in 20-40 years age group while 42 (59.2%) patients were recorded in 41-60 years age group. This confirmed that GIST mostly occur in later stage of life.

Relying on the location, size, and growth pattern of the tumor, the clinical presentation can be very diverse. In a systemic review conducted prior to the development of imatinib, Nilsson et al. found that patients with clinical symptoms had GIST malignancies with a mean size of 8.9 cm, ranging in size from 4 mm to 35 cm[14]. GISTs may present as palpable abdominal masses either due to the primary tumor or intra-abdominal metastases (e.g., liver, omentum, or peritoneum)[15-17]. However, literature has stated upper gastrointestinal bleed to be one of the common features seen in GIST patients as well[18-22]. Although Small intestinal GISTs are less common than the stomach, their main emergency presentation is in the form of subacute intestinal obstruction[23-26]. GISTs arising in the rectum and the colon comprise only 5 percent of all GIST related malignancies[27].

In a study by Urooj R, et al. has shown that frequency of Abdominal Pain was 60%, Abdominal mass 50%, Vomiting 40%, Anemia 30%, Weight loss 30% and Hematemesis was 10% in patients with gastrointestinal stromal tumor[12] which as compared to the findings of this study, where 42 (59.2%) patients had abdominal pain, 38 (53.5%) patients had abdominal mass, 36 (50.7%) patients had vomiting, 31 (43.7%) patients had anemia, 22 (31.0%) patients had weight loss while 11 (15.5%) patients had hematemesis.

There were a few constraints in the study: the main limitation being its quite small sample size. Though the disease being quite uncommon, still there is room for carrying out studies on larger sample sizes through multicenter. Therefore, large multi centered studies should be carried out in order to make its robust influence on future research studies and overall population.

CONCLUSION

Our study demonstrated abdominal pain as the most common presentation of gastrointestinal stromal tumor in our local population as local evidence which was followed by abdominal mass and vomiting. As gastrointestinal stromal tumors are uncommon but large tumors are usually symptomatic with abdominal pain as proved in this study.

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