

# Histopathological Study of Gastrointestinal Tumors

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## Abstract

**Introduction and Purpose:** This study was conducted to determine the relative frequency of various histopathological types of gastrointestinal (GI) tumors, to evaluate them in relation to age and sex of patients, and to get proportion of benign and malignant tumors and location of tumors.

**Methodology:** Histopathological study of 91 cases of GI tumors was carried out at NHL Municipal Medical College, Ahmedabad, from August 2013 to June 2015.

**Results:** Of total 91 cases, peak age distribution was in the sixth decade and male-to-female ratio was 2.03:1. GI tumors were more common in esophagus (28.57%), followed by the large intestine (23.07%), stomach (19.78%), rectum (15.4%), small intestine (9.89%), appendix (2.20%), and anal canal (1.09%). Benign and malignant tumors comprised 10.99 and 89.01%, respectively. Among malignant tumors, adenocarcinoma was the most common type (55.6%), followed by squamous cell carcinoma (32.09%), exclusively seen in esophagus.

**Conclusion:** GI tumors show a wide variation in the morphology. Hence, histopathological examination is mandatory for the diagnosis.

**Key words:** Benign, Gastrointestinal tumors, Histopathological study, Malignant

## INTRODUCTION

Gastrointestinal (GI) tumors are one of the most common neoplasms that are increasing annually world over and most commonly encountered problems in clinical practice with a high degree of morbidity and mortality. There is a great difference in incidence, behavior, treatment options, and prognosis of malignant neoplasms within the component sites of GI tract, as well as between various histological variants within the same morphological sites.<sup>[1]</sup> The microscopic analysis of these tumors and determination of histological types is thus helpful in predicting prognosis, deciding treatment options, conducting epidemiological studies and research.<sup>[2]</sup> This study was

undertaken to determine the relative frequency of various histopathological types of GI tumors, to get proportion of benign and malignant tumors, and to analyze the data on the basis of various parameters such as age, sex, location, and histopathological type.

## MATERIALS AND METHODS

A total of 91 histopathological reports of surgical specimens of gastrointestinal tumors obtained at Pathology Department, NHL Municipal Medical College, Ahmedabad, from August 2013 to June 2015 were analyzed. A detailed history of each patient regarding age, sex, chief complaints, and other relevant findings was taken. The specimen was fixed in 10% formalin. Each specimen was examined grossly and representative tissue bits were sampled. Tissue bits were processed by routine paraffin embedding technique. Tissue sections of 4–5 µm thickness were cut and stained by hematoxylin and eosin stain. Special stains were performed whenever required. Histopathological diagnosis was given and statistical analysis was done.

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## RESULTS

Gastrointestinal tumors were more common in the esophagus (28.57%), which was followed by large intestine (23.07%), stomach (19.78%), and rectum (15.4%). Anal canal (1.09%) and appendix (2.2%) were the least commonly involved locations. GI malignant tumors (89.01%) were more common than benign tumors (10.99%) [Figure 1]. Benign tumors were common in children and adults, whereas malignant lesions were common after 50 years of age. The highest incidence of GI tumors, i.e. 24.17% and 15.38% was observed in the 5<sup>th</sup>–6<sup>th</sup> decade for male and female, respectively [Table 1]. In the category of benign GI tumors, the prevalence of villous adenoma (30%) was the highest, followed by hamartomatous (Peutz-Jeghers) polyp (20%) and tubular adenoma (20%). The cystic lymphangioma of stomach (10%), tubulovillous adenoma of small intestine (10%), and juvenile rectal polyp (10%) had the same incidence. The prevalence of adenocarcinoma (55.6%) was the highest, followed by squamous cell carcinoma (32.09%). Majority of adenocarcinomas were found in the large intestine (42.2%) followed by stomach (33.3%). Of these 45 adenocarcinomas, 28 (62.22%) were moderately differentiated. Signet-ring adenocarcinomas were found in the stomach (13.3%) than colon (2.2%), while mucinous adenocarcinomas (4.4%) were found only in the large intestine. Squamous cell carcinoma was found exclusively in esophagus with moderate (80.77%) and poor (19.23%) differentiation. Other tumors encountered were GIST, carcinoid tumor, and non-Hodgkin's lymphoma (extranodal marginal zone MALT type) and basaloid carcinoma of anal canal [Table 2].

## DISCUSSION

In the present study, the highest distribution of GI tumors was observed in the 6<sup>th</sup> decade. Similar age distribution is observed in the studies of Devi and Suvarna.<sup>[3]</sup> However, in the studies of Prabhakar *et al.*<sup>[4]</sup> and Mohammad and Makaju,<sup>[5]</sup> the peak age distribution was in the 5<sup>th</sup> and 7<sup>th</sup> decade, respectively. Clear-cut male preponderance was found in the present study, which is consistent with the studies of Prabhakar *et al.*,<sup>[4]</sup> Mohammad and Makaju,<sup>[5]</sup> and Jamal *et al.*<sup>[6]</sup>

In our study, the most common site of GI tumors was the colorectal region (38.46%), followed by esophagus (28.57%). The studies performed by Thomas and Sobin<sup>[7]</sup> and Jamal *et al.*<sup>[6]</sup> also showed higher incidence of colorectal tumors.

Malignant tumors outnumbered the benign tumors. In the present study, most of the benign tumors were adenomatous polyps. Malignant tumors in the esophagus, SCC were the predominant tumor. Similar finding is noted in the studies of Jamal *et al.*<sup>[6]</sup> and Thomas and Sobin,<sup>[7]</sup> which showed

proportion of SCC to be 91% and 76%, respectively. In the present study, not a single case of esophageal adenocarcinoma was found. This could possibly be explained by the variability of predisposing factors among different population.

Among the gastric tumors, adenocarcinoma was the most predominant type. These findings were in conformity with studies conducted by Devi and Suvarna,<sup>[3]</sup> Mohammad and Makaju,<sup>[5]</sup> and Lavanya and Sreelatha,<sup>[8]</sup> whereas higher incidence of lymphoma observed in study conducted by Lavanya and Sreelatha<sup>[8]</sup> as compared to our study.

The small intestine is an uncommon site for tumor despite its great length and vast pool of dividing cells. We found GIST to be the predominant tumor in small intestine which is closely correlated with Mohammad and Makaju<sup>[5]</sup> study. As compared to Zhou *et al.*,<sup>[9]</sup> we found only one case of lymphoma in small intestine. Carcinoid tumor is commonly seen in small intestine and appendix.

In our study, colorectal adenocarcinomas comprised (86.67%; 26/29) colorectal malignant tumors which are consistent with the studies of Abdulkareem *et al.*<sup>[10]</sup> and Lavanya and Sreelatha<sup>[8]</sup>

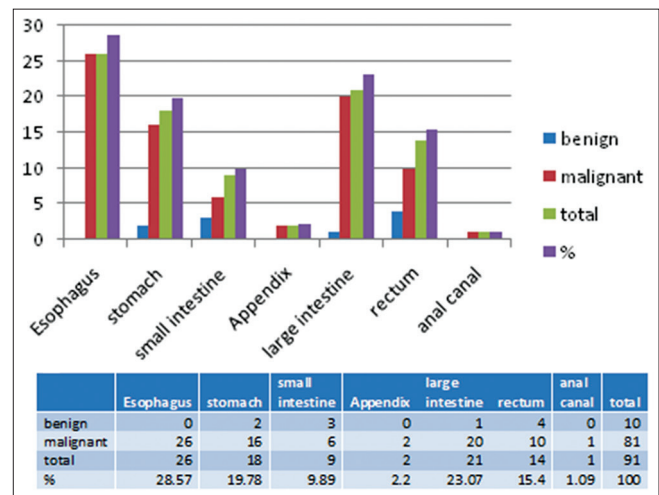


Figure 1: Anatomical distribution of gastrointestinal tumors

Table 1: Age and sex wise distribution of GI tumors

Age in years	Number of cases male (%)	Number of cases female (%)
0–10	3 (3.3)	0 (0)
11–20	1 (1.1)	1 (1.1)
21–30	4 (4.4)	3 (3.3)
31–40	8 (8.8)	2 (2.2)
41–50	11 (12.08)	5 (5.49)
51–60	22 (24.17)	14 (15.38)
61–70	11 (12.08)	3 (3.3)
71–80	1 (1.1)	2 (2.2)
Total	61 (67.03)	30 (32.97)

GI: Gastrointestinal

**Table 2: Distribution of malignant GI tumors**

S. no	Malignant tumors	Location	Histological			Subtype		Number of cases (%)	Total cases (%)
			Signet ring (%)	Mucinous (%)	Well differentiated (%)	Moderately differentiated (%)	Poorly differentiated (%)		
1	Adenocarcinoma	Stomach	6 (13.3)		0	3 (6.7)	6 (13.3)	15 (33.3)	45 (55.6)
		Small intestine			1 (2.2)			1 (2.2)	
		Large intestine	1 (2.2)	2 (4.4)	-	15 (33.3)	1 (2.2)	19 (42.2)	
2	Squamous cell carcinoma	Rectum				10 (22.2)		10 (22.2)	26 (32.09)
		Esophagus				21 (80.77)	5 (19.23)	26 (100)	
3	GIST	Small intestine						3 (100)	3 (3.7)
4	Non-Hodgkin's lymphoma	Stomach						1 (33.3)	3 (3.7)
		Small intestine						1 (33.3)	
		Large intestine						1 (33.3)	
5	Carcinoid tumor	Appendix						2 (66.7)	3 (3.7)
		Small intestine						1 (33.3)	
6	Basaloid carcinoma	Anal canal						1 (100)	1 (1.21)
Total								81	100

GI: Gastrointestinal

who noted 87.14% and 85.7% colorectal adenocarcinomas, respectively. Mucinous (2/29; 6.8%) and signet-ring (1/29; 3.4%) carcinoma in colorectal region comprised <10% in different studies,<sup>[8,10]</sup> including ours. Since only one case of basaloid carcinoma of anal canal was reported in our study, comparison with other studies was insignificant.

## CONCLUSION

GI tumors were more common in the 6<sup>th</sup> decade and showed male preponderance. Predominantly affected site was the colorectal region. Overall, adenocarcinoma was the predominant type. However, in esophagus, predominant type was the squamous cell carcinoma. In the small intestine, GISTs were more common than adenocarcinomas. Of 81 malignant cases, 19 cases (23.45%) presented with lymph node metastasis. Tumors of the GI tract show a wide variation in the histological type, making the histopathological examination crucial in the diagnosis of these tumors. Early diagnosis and treatment is beneficial for better management and is imperative in providing better quality of life to the patient.

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