Original Research Article

A study of neoplastic study of gastrointestinal tumors

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Abstract

Background: Gastrointestinal tumors account for a large proportion of all neoplasms. The tumors of the Gastrointestinal tract pose a major problem in oncology and also are a major cause of apprehension in patient with the abdominal complaint in whom the fear of the cancer is the greatest. There is world wide variation in the distribution of these neoplasm, which appear largely due to exogenous factors rather than genetic. **Objectives:** to determine the relative frequency of various histopathologic types of tumors of eosophagus, stomach and intestines, and knowledge about their prognosis will aid the clinician in effective management of patient. **Methodology:** It was a prospective observational study carried after permission of the institutional ethics committee. All biopsies and resected specimens of GIT with neoplastic lesions were examined for gross lesions. All specimens studied under light microscopy and tumors were classified according to the WHO International classification of Tumors of the esophagus, stomach and intestines. **Results:** Gastrointestinal tumor distributed throughout all age group with maximum in 5th and 6th decade of life with male:female ratio was 1.67:1. Out of 18 cases of esophageal tumors, 16 were of squamous cell carcinoma, 1 case of adenosquamous carcinoma and 1 case of basaloidsquamous carcinoma. Majority of cases of gastric tumors occurred in pylorus followed closely by body of the stomach. Out of 18 cases of colorectal carcinoma, 12 cases were adenocarcinoma, 3 were mucinous adenocarcinoma, 2 cases of Signet ring cell carcinoma and 1 case of Malignant melanoma. **Conclusion:** Tumors of the gastrointestinal tract show a wide variation in the histological type making the histopathological examination a must 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.

Keywords: Gastrointestinal track tumor, Histopathological examination, GIT neoplasm

Introduction

The neoplastic lesions of the Gastrointestinal Tract vary in different segments from oesophagus to anus. Histo-pathological changes in various neoplastic lesions of the gastrointestinal tract helps in proper diagnosis and deciding the mode of treatment to be offered to the patient. Gastrointestinal tumors account for a large proportion of all neoplasms [1]. Colorectal cancer ranks second and stomach cancer ranks fourth among the most common tumors of the world, according to the World Cancer Report of 2000 [2]. Curiously the small intestine is an uncommon site for tumor despite its great length and vast pool of dividing cells [1]. There is world wide variation in the distribution of these neoplasm, which appear largely due to exogenous factors rather than genetic [3].

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The tumors of the Gastrointestinal tract pose a major problem in oncology and also are a major cause of apprehension in patient with the abdominal complaint in whom the fear of the cancer is the greatest. Histopathological examination along with clinical findings and other diagnostics techniques helps to confirm the final diagnosis of various tumors of the GIT. This study is undertaken to determine the relative frequency of various histopathologic types of tumors of eosophagus, stomach and intestines, and knowledge about their prognosis will aid the clinician in effective management of patient.

Materials and Methodology

Study design and setting: It was a prospective observational study carried out over a period of 12 months by histopathology department of SSG hospital

and government medical college, Baroda in collaboration with surgery department. Human research Ethics committee permission was taken before starting the study.

Inclusion and exclusion criteria: All biopsies and resected specimens of GIT with neoplastic lesions were included in the study. While specimens of GIT without any tumor or tumor like lesions were excluded. And also endoscopic biopsy bit which is too small which may not come in block were excluded.

All surgically resected specimens of esophagus, stomach and intestines received at Department of Histopathology, Medical College and S.S.G hospital, Baroda for histopathological examination and diagnosed as neoplasm. After taking informed written consent of the patient detailed clinical history along with clinical findings were elaborated and noted. Evidence of metastasis was checked. Grading and staging was done in each patient. The specimen was then dissected, gross features of the tumor was described and kept for fixation in 10% formalin for12-36 hours. Standardized tissue bits were sampled from the tumor, surgical margins and lymphnodes, if identified and processed in automated histokinette and embedded in paraffin wax. Sections of 4-6µ thickness were cut using semi-automated microtome and stained with Haematoxylin and Eosin stain. Special stains and IHC were used, wherever necessary.

The histological features were studied under light microscopy and tumors were classified according to the WHO International classification of Tumors of the esophagus, stomach and intestines. Statistical analysis was done using Microsoft excel.

Results

According to inclusion and exclusion criteria total 48 cases could be enrolled in the study during one year. Age wise distribution shows Tumors of esophagus, stomach and large intestines had wide variation in age distribution. And among them 5th and 6th decade of life had the highest occurrence of gastrointestinal carcinoma with total 27 [56%] cases. [Table 1] The study showed there was a male predominance with the male to female ratio of 1.67:1 [Table 2].

Majority (93.75%) of the cases were of epithelial origin while the mesenchymal tumors and lymphomas constituted 6.25%. [Table 3]. On clinical examination lymph nodes were identified in 16 cases out of which metastatic deposits were seen only in 10 cases on histological examination, which constitutes 20.84% of all cases. Colon and rectal tumor had highest numbers of lymphnode enlargement [Table 4].

Table-1: Age wise distribution of all cases.

Age (years)	Esophagus	Stomach	Small intestine	Colon and rectum	Anal canal	Total (%)
11-20	-	-	-	1	-	1 (2.08)
21-30	1	-	-	3	-	4 (8.33)
31-40	1	1	-	2	2	6 (12.5)
41-50	7	3	1	3	-	14 (29.17)
51-60	7	2	-	4	-	13 (27.08)
61-70	2	-	-	4	1	7 (14.59)
71-80	-	-	1	1	1	3 (6.25)
Total	**18**	**6**	**2**	**18**	**4**	**48 (100)**

Table-2: Gender wise and anatomical distribution of all gastrointestinal tumors.

Site	Male	Female	Total
Esophagus	13	5	18 (37.5)
Stomach	4	2	6 (12.5)
Small Intestine	1	1	2 (4.16)
Appendix	-	-	-
Colon and Rectum	10	8	**18 (37.5)**
Anal Canal	2	2	4 (8.34)
Total	**30**	**18**	**48 (100)**

Table-3: Histological types of tumors of GIT.

Site	Esophagus	Stomach	SmallIntestine	Colonand Rectum	Anal Canal	Total	Percentage
Epithelial	18	4	2	17	4	45	93.75
Mesenchymal	-	1	-	1	-	2	4.17
Lymphoma	-	1	-	-	-	1	2.08
Total	**18**	**6**	**2**	**18**	**4**	**48**	**100**

Table-4 : Metastatic lymph nodes in tumors of GIT.

Site	Gross	Metastasis
Esophagus	1	1
Stomach	3	3
Small Intestine	2	1
Appendix	-	-
Colon and Rectum	9	4
Anal Canal	1	-
Total	**16**	**10**

Table-5: histological variant tumors of various sites.

Tumor Variant	Number
Esophageal tumors	
Adenocarcinoma	-
Adenosquamous	1
Squamous cell carcinoma	16
Basaloidsquamous	1
Gastric tumors	
Adenocarcinoma	3
Signetring adenocarcinoma	1
Diffuse large Bcell lymphoma	1
GIST	1
Small Intestinal tumor	
Adenocarcinoma	2
Colon and Rectal tumor	
Adenocarcinoma	12
Mucinous Adeno Ca	3
Signet ring cell Ca	2
Squamous cell Ca	-
Melignant melanoma	1
Undifferentiated Ca	-
Anal canal tumor	
Mucinous adenocarcinoma	1
Adenocarcinoma	3
Total	**48**

Out of 18 cases of esophageal tumors, 16 were of squamous cell carcinoma, 1 case of adenosquamous carcinoma and 1 case of basaloidsquamous carcinoma [Table 5]. The esophageal squamous cell Carcinoma were graded according to their histological differentiation and most of them (8) were seen to be well differentiated.

Majority of cases of gastric tumors occurred in pylorus (3) followed closely by body of the stomach (2) [Table 6]. Most of the tumors were seen on the luminal aspect as a firm and necrotic lesion. Also one lesion was ulceroinfiltrative and one lesion was nodular. Out of 6 cases of gastric tumors, 4 were of adenocarcinoma constituting 66.6%. The other 1 case of diffuse large B cell lymphoma and 1 case of Gastrointestinal stromal tumor (GIST) constituting 33.3% [Table 5]. Figure 1 is the GIST of stomach showing immunoreactivity for CD117. The mesenchymal tumor which occurred in the stomach was gastrointestinal stromal tumor. Grossly it appeared as a two nodule measuring 3.5x2x1cm. Histologically, the tumor was composed of spindle cells signet ring like cells and epithelioid cells. It was confirmed the same on IHC.

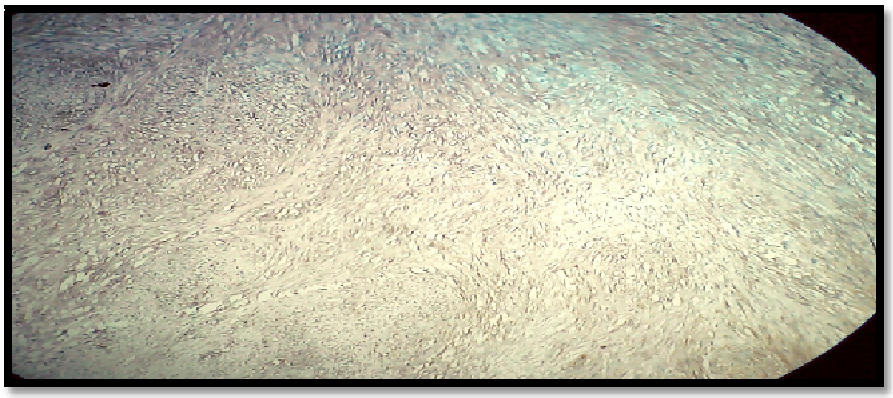

Figure-1: GIST of stomach showing immunoreactivity for CD117

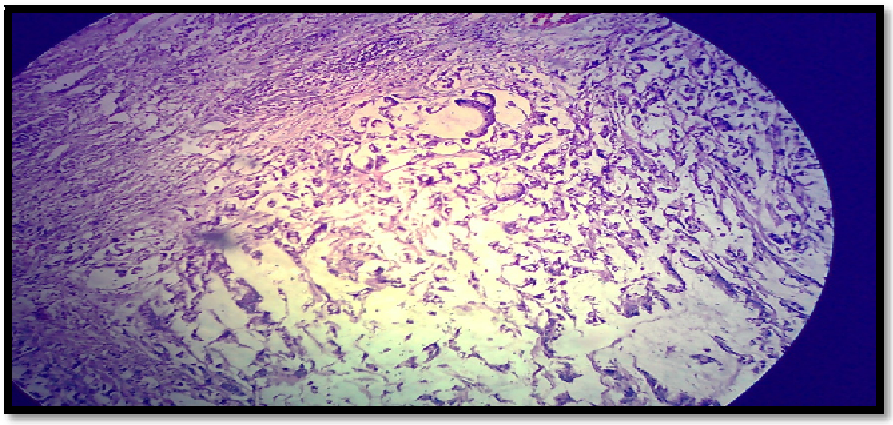

Figure -2: Signet Ring Carcinoma Rectum

Only two cases of small intestinal tumors were seen. One was located in the ileocaecal segment and other was located in the duodenum. Male to Female ratio is 1:1 with their age being 50 and 75 years. Both the cases were of Adenocarcinoma, moderately differentiated type.

Table 6: Anatomical distribution of gastric tumors.

Site	Number	Percentage
Cardia	**1**	**16.66**
Fundus	-	-
Body	2	33.34
Antrum	-	-
Pyloric Canal	3	50.00
Total	**6**	**100**

Table-7: Anatomical distribution of colorectal carcinoma.

Site	Number	Percentage
Caecum	0	0
Ascending Colon	1	5.55
Transverse Colon	2	11.12
Descending Colon	1	5.55
Sigmoid Colon	2	11.12
Rectum	8	44.44
Rectosigmoid	4	22.22
Total	**18**	**100**

Rectum was the commonest site constituting 44.44% of colorectal malignancies colorectal tumors. [Table 7] Grossly most of the cases (5) presented as an ulcero infiltrative lesion, while 2 cases were exophytic and one case was fungating. Out of 18 cases, 12 cases were adenocarcinoma. The others were 3 cases of mucinous adenocarcinoma, 2 cases of Signet ring cell carcinoma [figure 2] and 1 case of Malignant melanoma [Table 5]. Grossly lymphnodes were identified in 9 cases while metastasis was seen only in 4 cases on microscopic examination.

Of the 4 cases of anal canal 1(25%) case was mucinous adenocarcinoma and 3 cases(75%) were Adenocarcinoma, moderately differentiated type.

Discussion

Gasrointestinal tract are some of the common neoplasms encountered in India. They demonstrate an array of histological patterns, varied clinical presentations, an assortment of gross patterns and an immense variability in their prognosis. They also show marked geographic variation in the anatomical sites involved. As in western countries frequencies are decreasing. Considering the numerous variables involved, it would be justified in undertaking an in-depth study into tumors of Gasrointestinal tract. A total of 48 cases were studied from October 2013 to October 2014.

Tumors of GIT were seen over a wide range of age (12 years to 80 years). The highest distribution was found in the 5th decade, which was consistent with the study by Prabhakar et al [4]. However the peak distribution was 6th and 7th decade in study done by SfoortiGoswami et al [1] and Mohammad et al [5] respectively. A male predominance was observed in this study with a male to female ratio of 1.67:1. This ratio is less when compared with studies of SfoortiGoswami et al [1] and Prabhakar et al [4] while the ratio is more when compared with study of Mohammad et al46 where the ratio is 1.25:1 The site distribution of various tumors varies with the geographic location. Stomach carcinoma is the fourth most common cancer and colorectal is the second commonest cancer worldwide. There has been a dramatic decline in the incidence of stomach cancer, which can be due to early diagnosis and treatment of H.pylori infections. In the present study, the commonest site for malignant tumor was the Large intestine constituting 45.84%, followed by tumors of Esophagus which constitutes 37.5% of the cases.

In present study, 77.78% of esophageal tumors were in the age group of 40-60 years. Leena Devi et al [6] in 1980 reported a maximum number of cases i.e. 33.8% were in the age group of 51-60 yrs. Mohammed et al [5] in 2006 reported a maximum number of cases were in the age group of 21-30 yrs. Ahmed Mohammed Afroz et al [7] in 2012 reported a maximum number of cases i.e. 44.11% were in the age group of 61-70 yrs. According to the histology in the present study, 88.88% cases were squamous cell carcinoma, 1 case (5.56%) cases was adenosquamous carcinoma and 1 case (5.56%) cases was basaloidsquamous carcinoma. Ahmed Mohammed Afroz et al [7] reported 96% cases to be of squamous cell carcinoma and 4% cases to be of adenocarcinoma. In the present study 5.56% cases of adenosquamous carcinoma were reported in the esophagus. Gal et al [8] reported 3.48% cases of adenosquamous carcinoma in the esophagus.

Age distribution shows that 50% cases of gastric tumor were present in age range of 41-50 years. In the study M.Lavanya et al [9], 2012, 37.57% cases being reported in the age range of 41-50 years. In the study Ahmed MohammedAfroz et al [7], 46.67%% cases being reported in the age range of 41-50 years. Thus the tumors of the stomach are commoner in 41-50 years of

age group and the result of the present study are similar with studies of M. Lavanya et al [9], 2012 and Ahmed Mohammed Afroz et al [7]. In the present study, 66.67% cases were adenocarcinoma, 16.67% cases were diffuse large B cell lymphoma, and 16.67% cases were GIST.Out of 4 cases of adenocarcinoma, 1 case 16.67% was belonged to the signet ring variety. Mohammed et al [5], 2006 reported adenocarcinoma to be commonest tumor of the stomach. Ahmed Mohammed Afroz et al [7], also reported adenocarcinoma to be commonest tumor of the stomach. Lewin et al [10] in 1978 reported 48% cases of lymphoma, and M. Lavanya et al [9] reported 12.5% cases of lymphoma. Stomach is the commenest site for GIST.

Small intestinal tumors are relatively rare and constitute only 3-6% of all gastrointestinal tumors in spite of constituting 75% of the length and 90% of the mucosal surface of the alimentary tract. Only 2 cases were reported in the present study (4.16% of all cases), first was in the ileum and the age was 50 year. Second was in the duodenum and the age was 75 year. In the study by Mohammad et al [5], by only 2 cases being reported in small intestine. In conformity with study by Shahid Jamal et al, [11] there was a male predominance (M:F-2.6:1) and the common site of occurrence of lymphoma was ileum. The study done in China by Zhi-Wei et al [12] showed a male predominance with average age of occurrence being 47 years. Leiomyosarcoma has the highest occurrence followed closely by adenocarcinomas, and the commonest site of occurrence being the ileum.

Tumors of the colon and rectum are the commonest tumors in the gastrointestinal tract in the Western World. However, in India these tumors are relatively rare, but its incidence is increasing and varies from place to place. In the present study, 18 cases were from the colorectal region constituting the 37.5% of all cases. Thus the maximum number of cases in the present study were in the age range of 51-70 years. M.Lavanya et al [9] in 2012 reported maximum cases in 51-60 years age range.

According to the histology in the present study, adenocarcinoma accounted for 94.44% of 18 cases studied in the large intestine. Only one case(5.56%)was Malignant melanoma. Leena Devi et al [6] in her study of 260 cases of malignancies reported 86.15% cases of adenocarcinoma, 5.38% of squamous cell carcinomas and 4.23% of undifferentiated carcinomas. Leiomy-osarcomas accounted for 0.77% while lymphomas accounted for 2.31%.

Only 4 cases of tumor of anal canal region was reported 8.34% of all cases. Out of them 3(75%) cases were adenocarcinoma and 1(25%) case was mucinous adenocarcinoma. They were reported in the age range of 31-75 years. Since only 4 cases were reported in the present study, comparisons with other studies were insignificant.

Conclusion

Tumors of the gastrointestinal tract show a wide variation in the histological type making the histopathological examination a must 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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