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Clinicopathological Study of Gastrointestinal Tract Tumours

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Abstract

Background: Gastrointestinal tumors account for a large proportion of all neoplasms. Colorectal cancer ranks second and stomach cancer ranks fourth amongst the most common tumors of the world, according to the World Cancer Report of 2000. *Aims*: The present study was undertaken with a view 1) To determine the frequency of GIT tumors with respect to age, sex and site of lesion in our institute. 2) To classify the GIT tumor according to WHO classification. *Material and Methods*: This was a prospective study over three years period. Gross and histopathological examination of the specimens was done, for assessing appearance and extent of lesion. Stains used were routine hematoxylin and eosin stain. Special stains such as Periodic acid Schiff (PAS), Alcian blue, Mucicarmine were done wherever required. The clinicopathological data was analyzed and observations were noted. *Results:* Of 129 cases of GI tumours, 98% were malignant and 1.6% was benign. GI malignancies had a peak in 51-60 years. M: F ratio was 1.1:1. Colorectal cancers occurred most commonly followed by oesophagus, stomach and small intestine in descending order. *Conclusion*: There is a need to conduct detailed studies before these societies are transformed into western-like environments. Otherwise we may miss an unique opportunity to understand the factors that could prevent many cancers in the world.

Keywords: GIT; Tumor; Colorectal; Cancer; Oesophagus; Stomach; Histopathology; Small Intestine.

Introduction

Gastrointestinal tumours 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]. There is a worldwide variation in the distribution of various neoplasms. These international differences appear largely due to exogenous factors rather than due to inherited differences between populations [3]. In India, according to the National Cancer Registry, esophageal and gastric cancers are the most common cancers found in men, while esophageal cancer ranks third among women after carcinoma of breast and cervix [4].

GI tumours display marked epidemiological, clinical & morphological variation. This study was undertaken to determine the relative frequency of various histopathological types of gastrointestinal tumours & to analyze the data on the basis of various parameters like age, sex, location, histopathology type etc.

Material and Methods

Present study was carried out in Department of Pathology in our institute over three years duration. Selection of cases was done according to clinical history and specimens sent from clinical wards, either biopsy or resected specimen. Gross examination of the specimens was done, for assessing appearance and extent of lesion. Sections were processed for histopathological study. They were stained by routine hematoxylin and eosin stain for basic study of lesion

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based on its histomorphology. Special stains such as Periodic acid Schiff (PAS), Alcian blue, Mucicarmine were done wherever required. The clinicopathological data was analyzed and observations were noted.

Observations

Total 129 cases of gastrointestinal tract (GIT) tumours were included in the present study. Amongst 129 cases, there were 2 cases of benign neoplasms and rest were malignant. Amongst a total of 127 cases of gastrointestinal tract malignancies, 67 were males and 60 were females with M: F ratio being 1.1:1 showing almost equal frequency in both sexes. Highest frequency of cases was seen within 51-60 years of age (35.4%). Site wise distribution of GIT malignancies shown in Table 1. Colorectal cancers showed highest frequency (51.9%) amongst gastrointestinal malignancies followed by cancers of oesophagus (25.2%), stomach (17.3%) and small intestine (5.5%) in descending order.

GIT malignancies were categorized according to the age, sex and site of the lesion. It is shown in Table [2]. Out of 32 cases of oesophageal cancers, 19 were males and 13 females with M: F ratio of 1.5:1. Most cases were seen in 41-60 years of age in both sexes.

Gastric cancers were seen in 22 cases with M: F ratio of 1.8:1 showing male preponderance, with most cases seen in the age group of 51-60 years in males and 41-50 years in females. Cancers of small intestine accounted for 5.5% of cases of gastrointestinal tract malignancies with M: F ratio of 2.5:1. Colorectal cancers accounted for 51.9% of all gastrointestinal tract malignancies. Most cases were seen in the age group of 51-60 years. M: F ratio was 0.8:1 for colorectal cancers in the present study.

Twenty-eight cases of colon cancers were found, constituting 22% of all gastrointestinal tract neoplasms. It was slightly more common in females with M: F ratio of 0.9:1. Cancers of rectum and anal canal accounted for highest number of cases (29.9%) with female preponderance and M: F ratio being 0.7:1.

In the present study, cancer of oesophagus most commonly involved middle third (62.5%) followed by lower third (25%) and upper third (12.5%) of oesophagus. Grossly, oesophageal cancers were presented as fungating / exophytic growth most commonly, followed by ulcerative, infiltrating and polypoidal growth. Histological variants of oesophageal carcinoma shown in Table 3. Squamous cell carcinoma was commonest histological type and accounted for 68.8% of all cases. Clinically, dysphagia was the predominant presentation in oesophageal cancer patient.

Gastric carcinoma was seen in 22 cases. Pylorus was most commonly affected site in stomach cancers accounting for 59.1% cases, followed by body (18.2%), cardia and fundus (13.6%) and whole stomach (9.1%). Localized infiltrating type was most commonly observed (50%) gross finding in stomach cancers in present study. Other forms of presentation on gross were ulcerative (22.7%), fungating (13.6%), diffuse infiltrating (9.1%) and polypoidal growth (4.5%). Histopathological diagnosis of gastric carcinoma is shown in Table 4. Tubular adenocarcinoma was the commonest microscopic type accounting for 40.8% of all gastric cancers, followed by signet ring cell carcinoma and papillary adenocarcinoma. Well differentiated type was commonest amongst all tubular adenocarcinoma. Cases of gastric carcinoma were most commonly presented with complaints of Epigastric pain (68.2%) followed by vomiting (54.5%). Frequency of stomach cancer was seen in the decreasing order in persons of Blood group A (40.9%), group O (27.3%), followed by group B (22.7%) and group AB (09.1%).

Cancer of small intestine constitute of 7 cases, of which 2 from duodenum and rest were from ileum. Both the cases in duodenum were located in periampullary region. Patients presented with features of biliary obstruction, pain in abdomen, vomiting and anorexia. Of five ileal cancers, four were primary including two cases of GISTs and one case each of carcinoid and B cell lymphoma of MALT type and remaining case was of secondary from a suspected case of carcinoma ovary.

Cancer of colorectal and anal canal region constitute of total 66 cases. Site wise distribution of colorectal cancer is shown in Table 5. Left sided malignancies had higher frequency than right side in the present study. Cancer of rectum was commonest amongst all colorectal cancers. Among the colorectal cancer, exophytic growth was seen in more than half of all cases and least common was polypoid type of growth. Histopathological categorization of colorectal cancer is shown in Table 6. Adenocarcinoma constituted most of colorectal cancers (69.7%). Abdominal pain and altered bowel habits were the predominant features seen in colon cancer. In case of cancer of rectum and anal canal, per rectal bleeding and palpable growth was the most common form of presentation.

Three cases of lymphomas were observed in present study constituting 2.4% of all gastrointestinal malignancies. Two cases were seen in colon and one

in small intestine. Youngest patient was 13 years old male. Presenting signs and symptoms included pain in abdomen, weight loss, fever and altered bowel habits.

Though present study did not aim at study of metastases, the observations noted are summarized. Out of total 90 resection specimens, lymph nodes were received with 13 oesophageal, 15 gastric, 15 colonic and 11 cases of anorectal malignancies.

Evidence of lymph node metastasis was found in 8 oesophageal, 9 gastric, 6 colonic and 4 anorectal malignancies. One case of gastrointestinal stromal tumour of stomach was found to have hepatic metastasis. Colorectal cancers showed evidence of metastasis in peritoneum in 5 cases, liver in 3 cases, and appendix in one case and bladder invasion in one case.

In the present study, only 2 cases (1.6%) were of benign tumours of gastrointestinal tract. Both were females of age 7 and 8 years, diagnosed as juvenile rectal polyps. They presented with per rectal bleeding, mass in rectum and pain in abdomen.

Table 1: Site wise distribution of GIT malignancies

Site	Oesophagus	Stomach	Small intestine	Colon	Rectum & Anal canal	Total
No. of cases	32	22	07	28	38	127
Percentage	25.2%	17.3%	05.5%	22%	29.9%	100%

Table 2: Age, sex and site wise distribution of GIT malignancies

Sites		Age Group (year)							
		< 20	21-30	31-40	41-50	51-60	61-70	71 & above	Total
Oesophagus	M	--	--	--	07(36.8%)	07(36.8%)	05(26.3%)	--	19(59.4%)
	F	--	01(7.7%)	01(7.7%)	04(30.8%)	04(30.8%)	03(23%)	--	13(40.6%)
Stomach	M	--	--	03(21.4%)	02(14.3%)	08(57.1%)	01(7.1%)	--	14(63.6%)
	F	--	--	01(12.5%)	03(37.5%)	02(25%)	02(25%)	--	08(36.4%)
Small intestine	M	01 (20%)	--	--	02(40%)	01(20%)	01(20%)	--	05(71.4%)
	F	--	01(50%)	--	--	--	01(50%)	--	02(28.6%)
Colon	M	01(7.7%)	--	01(7.7%)	01(7.7%)	08(61.5%)	02(15.4%)	--	13(46.4%)
	F	--	--	02(13.3%)	04(26.6%)	06(40%)	03(20%)	--	15(53.6%)
Rectum and anal	M	01(6.3%)	02(12.5%)	01(6.3%)	05(31.3%)	01(6.3%)	05(31.3%)	01(6.3%)	16(42.1%)
canal	F	--	--	05(22.7%)	07(31.8%)	08(36.4%)	--	02(9%)	22(57.9%)
Total	M	03(4.5%)	02(2.9%)	05(7.5%)	17(25.4%)	25(37.3%)	14(20.9%)	01(1.5%)	67(52.8%)
	F	--	02(3.3%)	09(15%)	18(30%)	20(33.3%)	09(15%)	02(3.3%)	60(47.2%)
Total		03(2.4%)	04(3.1%)	14(11%)	35(27.6%)	45(35.4%)	23(18.1%)	03(2.4%)	127(100%)

Table 3: Histopathological diagnosis in cancer of oesophagus

HPE Diagnosis	Squamous cell Carcinoma			Adeno Ca.	Undif. Ca.	Total
	WD	MD	PD			
No. of cases	06	12	04	07	03	32
Percentage	18.8%	37.5%	12.5%	21.9%	9.4%	100%

Table 4: Histopathological diagnosis in cancer of stomach

HP Diagnosis	Tubular Adeno Ca			Papillary Adeno Ca	Mucinous Adeno Ca	Signet ring Ca	UndifCa.	Carci-noid	GIST	Total
	WD	MD	PD							
No. of cases	04	02	03	03	01	04	02	01	02	22
%	18.2	9.1	13.6	13.6	04.5	18.2	9.1	4.5	9.1	100

Table 5: Site wise distribution of colorectal cancers

Site	Caec-um	Appe-ndix	Ascn colon	Hep flex	Trans colon	Splen flex	Desn colon	Sigm colon	Rect-sigm	Rect-um	Anal canal	Total
cases	12	01	03	02	03	02	03	02	06	28	04	66
%	18.2	1.5	4.5	3	4.5	3	4.5	3	9.1	42.4	6.1	100

Table 6: Histopathological diagnosis of colorectal and anal canal cancers

HP diagnosis	Adenocarcinoma WD	MD	PD	Mucinous Adeno Ca	Signet ring Ca	SCC	Undif. Ca.	NHL	GIST	Total
No. of cases	27	17	02	09	02	04	02	02	01	66
%	40.9%	25.8%	03%	13.6%	03%	6.1%	03%	03%	1.5%	100%

Abbreviations: M: Male, F: Female, WD: Well Differentiated, MD: Moderately Differentiated,
PD: Poorly Differentiated, Ca: Carcinoma, Undiff: Undifferentiated, Ascn: Ascending, Hep Flex: Hepatic Flexure, Trans: Transverse, Splen flex: Splenic Fexure, Desn: Descending, Sigm: Sigmoid,
SCC: Squamous Cell Carcinoma, NHL: Non-Hodgkin's Lymphoma, HP: Histopathological,
GIST: Gastro Intestinal Stromal Tumor.

Discussion

Cancer of the gastrointestinal tract has become a worldwide disease. The incidence of gastrointestinal tract malignancies varies from country to country and also in different parts of the same country. Present study was carried out in an attempt to find out frequency of gastrointestinal tract tumours in the region to which our institute caters and analyze the cases with regards to factors such as age, sex, clinical presentation and pathological features of the tumours. A total of 129 cases of gastrointestinal tract tumours were studied amongst a total of 1,547 cases of malignant lesions of all sites over a period of two years. Of 129 cases of gastrointestinal tract tumours, 127 cases were of malignant neoplasms on histopathological examination and two cases had benign lesions.

Sabharwal et al [5] observed 8.4% cases of GIT malignancies in Medical College, Ludhiana. In a study by Jussawalla et al [6] in Aurangabad city, relative frequency of GIT malignancies was found to be 27%. Umap and Dhamne [7] found 9.1% cases of GIT malignancies in Nagpur Medical College. Kulkarni et al [8] found 13.7% cases in Ambajogai Medical College. Relative frequency of 8.2% of GIT malignancies in the present study compares well with the results of study conducted by Sabharwal et al [5] and Umap and Dhamne [7].

In the present study, GIT malignancies showed almost equal distribution in both the sexes with M: F ratio was 1.1:1. While the sex ratio in previous studies was 1.1:1 in a study by Sabharwal et al [6], 2:1 in a study by Kulkarni et al [8]. Sex factor usually plays a very important role in GIT malignancies. Almost equal sex distribution observed in our study could be explained by changing life styles, dietary habits, increased female literacy rates, increasing awareness about health problems, earlier seeking of medical advice, availability of modern diagnostic facilities and increased life expectancy.

The M: F ratio in oesophageal cancer in present study was 1.5:1. Rao et al [9] noticed the sex ratio in oesophageal cancer was 2:1. Peak incidence of oesophageal cancers was seen in 40-60 years age group in studies carried out by Borges E.J. [10] and Verma et al [11]. Similar findings were seen in the present study also.

Male to female ratio was 1.8:1 showing male preponderance amongst stomach cancer cases in the present study. Sex ratio observed in our study was comparable with studies of Jussawalla et al [6] and Umap and Dhamne [7]. It was comparable with that reported in the studies carried out by Paymaster et al [12] and Sharma O.P. [13]. Sex ratio for small intestinal malignancies reported in various studies was 1:4 in Sabharwal et al [5], 2:1 in Umap and Dhamne [7] study. In the present study, M: F ratio was 2.5:1. Peak incidence of small intestinal cancers was observed in 45-65 years in Baid et al [14] study and 41-50 years in a study by Umap and Dhamne [7]. Highest number of cases of intestinal cancer was observed in 41-50 years age group.

Female preponderance with M: F ratio of 0.8:1 was observed in the colorectal cancer patients in the present study. McSwain et al [15] (0.9:1) and Jussawalla et al [6] (0.9:1) also showed female preponderance among colorectal cancer cases. Peak incidence of colorectal cancer was observed in the age group was 51-60 years in present study. Similar finding was seen with McSwain et al [15]. It was seen that highest frequency was seen of colorectal cancers and least common was small intestinal malignancies. Findings were consistent with Sabharwal et al [5] and Kulkarni et al [8] studies.

We observed highest number of cases (62.5%) of oesophageal cancer occurs in the middle third of oesophagus. Similar findings were observed the studies by Verma et al (62%) [11] and Rao et al (52.8%) [9]. Grossly, commonest type of oesophageal carcinoma observed in present study was fungating / exophytic type of growth in 53.1% cases. Almost similar findings were reported in a study conducted by Mohankumar and Ramachandran [16]. Squamous cell carcinoma accounting for 68.8%, was the

commonest histological type of oesophageal carcinoma in the present study. Similar findings were noted in the previous studies by various authors like 90.3% in Borges E.J. [10] and 90.0% in Roohullah et al. [17] Dysphagia was the commonest presenting symptom, causing the patients to seek medical attention and was seen in 93.8% cases in the present study. It was also the commonest presenting symptom in studies by Mohankumar and Ramachandran [16].

It was seen that pylorus of the stomach was the seat of disease in a majority of cases in the present study. Whole stomach was the least commonly affected site. Similar observation were noted in the studies by Mise et al [18] and Chanda et al. [19] Infiltrating type of lesion was commonest on gross examination in the present study and accounted for 59% of all cases. This finding was in accordance with study of Chanda et al [19] in which infiltrating type constituted 68.8% cases. Adenocarcinoma of stomach was commonest microscopic type observed in studies by Paymaster et al [12]n 68% cases and Sharma O.P. [13] in 47.6% cases. In the present study, adenocarcinoma accounted for 77.1% of cases of cancers of stomach. Epigastric pain was the commonest clinical presentation seen in gastric cancer. It was observed in 60.3% patients in Paymaster et al [12] and 66.7% in Sharma O.P. [13]. Hematemesis was the least common symptom observed in various studies.

Left sided colon cancers were more commonly observed than right sided cancers in various studies. Of all colorectal cancers, cancer of rectum showed highest frequency i.e. 42.4% in the present study, which is in accordance with the studies of McSwain et al [15] and Falterman et al. [20]. In the present study, exophytic carcinomas were the commonest type seen in 54.5% cases, followed by endophytic 34.8%, annular 7.6% and polypoid 3% cases. Frequency of exophytic and endophytic growths matches approximately well with study of Ahmad et al [21]. Commonest histopathological type observed amongst all colorectal cancers was adenocarcinoma in various series. Relative frequency of microscopic types observed in the present study was in accordance with that observed in Meher Homji and Gangadharan [22] study. All squamous cell carcinomas were observed in anal canal and its incidence matches approximately well with Falterman et al [20].

Common presenting signs and symptoms of cancer of colon include pain in abdomen and altered bowel habits. Bloody diarrhoea was commonly seen in right sided lesions and obstructive manifestations occurred more commonly in left sided lesions. Palpable lump was common finding in growths involving caecum. Bleeding either in the form of visible or occult blood was less commonly seen finding. Presenting symptoms and signs observed in cases of present study correspond well with Falterman et al [20] study.

Conclusion

In the 20th century cancer has gotten the better of humanity in the industrialized world, evidenced by the emergence of the disease as a leading cause of death from 1900. In the 21st century, it threatens to decimate civilization in developing countries. In the collective fight against cancer, there is much research needed to fill the gaps in the data, to estimate population trends, to evaluate the interventions, knowledge of the outcome of treatments and quality-of-life assessments. Hence, there is a need to conduct detailed studies before these societies are transformed into western-like environments. Otherwise we may miss an unique opportunity to understand the factors that could prevent many cancers in the world.

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