Spectrum of histopathological evaluation of neoplastic lesions of gastrointestinal tract- A 3 years retrospective study

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Abstract

Introduction: Gastrointestinal tract is the common site of cancer in both men & women throughout the world. Gastrointestinal cancer causes high mortality& morbidity. Diagnosis of these lesions requires endoscopy followed by biopsy as they have high index of suspicion. Current study aimed to study the incidence of various histological patterns of benign & malignant gastrointestinal tumors.

Methods: A retrospective study of histopathological reports of all neoplastic lesions of the gastro intestinal tract of 3 years study period specimens received in the department of pathology.

Results: A total of 63 cases were included in this study. Out of which malignant lesions were 52 and benign lesions were 11.The most common malignant lesion of the GIT is Adenocarcinoma.

Conclusion: The most common region involving neoplasm is the colorectal region. The neoplasms are most common in males than in females. The most common age group affected by GIT neoplasms is 41-60 Years.

Keywords: Adenocarcinoma, Squamous cell carcinoma, Villous adenoma, Adenomatous polyp.

Introduction

Diseases of Gastro-intestinal Tract (GIT) are more common than any other systems in human body. Gastrointestinal tract is the common site of cancer in both men & women throughout the world. Gastrointestinal tract is a hollow tube extending from oral cavity to anus that consists of Esophagus, Stomach, Small intestine, Large intestine, and Anus.[1,2] Gastrointestinal cancer causes high mortality & morbidity.[3] Diagnosis of these lesions requires endoscopy followed by biopsy as they have high index of suspicion. The specimens comprise of endoscopic biopsies from gastric and duodenal mucosa, colonoscopic biopsies, partial and hemi-colectomies, appendicectomies and laparotomy. According to GLOBOCAN, colorectal cancer is the 3rd most common cancer worldwide.[4] Adenocarcinomas are more common in intestine. Carcinoma stomach is the 5th most common cancer in the world & 3rd most common cause of cancer deaths globally.[4,5] Cancers of gastrointestinal tract constitute 20% of all the cancers. Esophageal malignancies are the eighth most common malignancy worldwide and sixth most common of cancer related death. In India, colorectal cancer is the 4th most common cancer and Cancers of gastrointestinal tract constitute 16% of all the cancers.[4,5] Esophageal malignancy accounts for 5.5% of all the malignant gastrointestinal tracts tumours with squamous cell carcinoma being the most common histopathological diagnosis, showing strong gender predilection towards males. The upper GI endoscopy helps in early detection of mucosal lesions and diagnosis of the carcinomas at early stage leading to early clinical management.[6]

Current study aimed to study the incidence of various histological patterns of benign & malignant gastrointestinal tumors.

Materials and Methods

Study design: A retrospective study of histopathological reports of all neoplastic lesions of the gastro intestinal tract.

Study period: 3 years (July 2015-June 2018), specimens received in the department of pathology.

The material of the study include the resected part of the GIT and the endoscopic biopsies, colonoscopic biopsies.

All the specimens received were fixed in 10% formalin for 24 hrs.(The regular practice followed in the department).Gross features of specimen as entered in records were noted. Usually multiple sections are processed depending on size and nature of the lesion. Routine tissue processing was done and sections were stained with hematoxylin and eosin. After detailed study of the sections under the light microscope the final diagnosis was given. Inadequate biopsies were excluded from this study. The data was analysed and results were studied.

Results

A total number of 63 specimens received over a three (3) years period. There were 42males (66.6%) and 21females(33.3%) giving a male to female ratio of 2:1. The lesions were classified based on the histological diagnostic features into: Benign neoplasms, Malignant neoplasms. The lesions included under benign neoplasms are –Adenomatous polyp, Inflammatory fibroid polyp, Adenoma. Malignant neoplasms are

Adenocarcinoma, Squamous cell carcinoma, Leiomyosarcoma.

Among the cases, the site wise distribution of Malignant neoplasms were demonstrated as Esophagus, stomach, small intestine, large intestine, anus and appendix were 11, 16, 4, 13, 5, 3 and 52. Total 8 cases Adenomatous polyp observed in benign neoplastic lesions.

A total of 35 cases of Adenocarcinoma recorded in malignant neoplastic lesions. 11 Squamous cell carcinoma were identified.

Table 1: Gender wise distribution of GIT neoplastic lesions

Gender	Number of cases	Percentage (100%)
Male	42	66.67
Female	21	33.33
Total	63	100

Table 2: Age wise distribution of GIT neoplastic lesions

Age	Number of cases	Percentage (100%)
0-20	3	4.8%
21-40	8	12.7%
41-60	34	54%
61- 80	17	27%
81 & above	1	1.5 %

Table 3: Site wise distribution of GIT neoplastic lesions

Site in GIT	Number of cases	Percentage (100%)
Esophagus	11	17.5%
Stomach	18	28.5%
Small intestine	5	8%
Appendix	3	5%
Large intestine	19	30%
Anal canal	7	11%

Table 4: Site wise distribution of Benign and Malignant neoplasms

Site	Benign	Malignant
Esophagus	0	11
Stomach	2	16
Small intestine	1	4
Large intestine	6	13
Anus	2	5
Appendix	0	3
Total = 63	11	52

Table 5: Distribution of Malignant neoplastic lesions of GIT

Type of lesion	Number of cases	Percentage (100%)
Adenocarcinoma	35	67
Squamous cell carcinoma	15	29
Others	2	4
Total	52	100

Table 6: Site wise distribution of different types of neoplastic lesions of GIT

Type of lesion	Esophagus	Stomach	Small intestine	Appendix	Large intestine	Anal canal
Inflammatory fibroid polyp	0	0	1	0	0	0
Adenomatous polyp	0	2	0	0	4	2
Adenoma	0	0	0	0	2	0
Adenocarcinoma	0	15	3	2	12	3
Squamous cell carcinoma	11	1	0	0	1	2
Leiomyosarcoma	0	0	1	0	0	0
Carcinoid	0	0	0	1	0	0

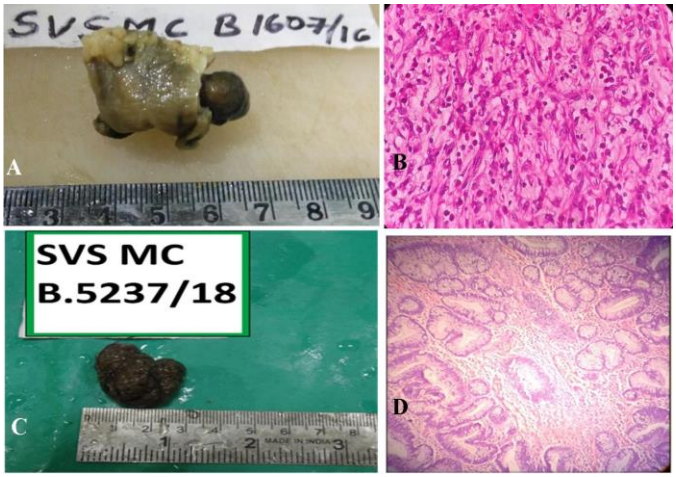

Fig. 1: A: Gross picture of Inflammatory fibroid polyp; B: H&E staining image of Inflammatory fibroid polyp(400x); C: Gross image of Adenomatous polyp D. H& E staining of polyp400x)

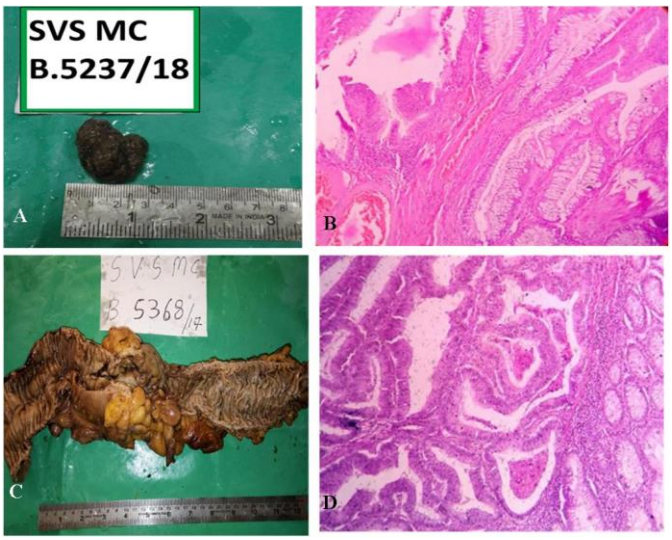

Fig. 2: A: Gross image of Villous adenoma; B: H& E staining of Villous adenoma(400x); C: Gross image of small intestine; D: Microscopic picture of adenocarcinoma small intestine(H&E 400x)

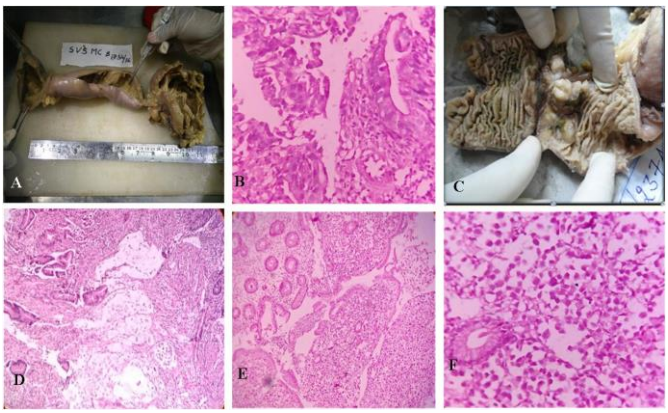

Fig. 3: Gross picture of colon with grey brown mass; B: Microscopic picture of adenocarcinoma(H&E400x); C: Gross picture of mucinous adenocarcinoma intestine; D: Microscopic image of mucinous adenocarcinoma showing mucinous pools(H&E 100x); E. & F: Microscopic picture of signet ring carcinoma (H&E 100x and 400x)

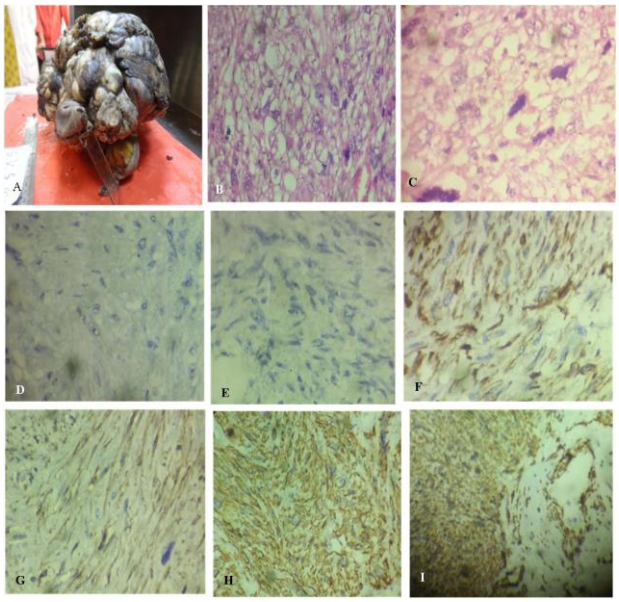

Fig. 4: A: Gross image and cut section of Leiomyosarcoma of small intestine; B & C: Microscopic pictures showing spindle cells, Epithelioid cells, nuclear atypia, cellular pleomorphism & mitotic figures(H&E 400x); D: IHC-GFAP; E: IHC-KIT117; F: IHC-SMA; G: IHC-Calponin. H. IHC-Caldesmon. I. IHC-Desmin

Discussion

Worldwide gastrointestinal tract (GIT) malignancies stand among top ten leading sites for cancer. GIT cancers constitute 15-25% of all cancer burdens. Very remarkable and striking differences are observed in the occurrence of this cancer in different regions and different races of the world. They remain asymptomatic for long periods and are often very advanced at the time of diagnosis.[7]

Introduction of the endoscopes in 1960's has greatly improved the diagnostic facility for fiberoptic endoscopy because they are readily accessible and can easily be sampled for specific histopathological or microbiologic investigation with available biopsy forceps. Tissue specimen can be removed from the lesions under direct vision using biopsy forceps. The procedure causes minimal discomfort and thus can be repeated. Histopathological study of biopsy specimens are used to confirm endoscopic diagnosis in suspected malignancy or to rule out in the endoscopically benign appearing lesion.

Orally, squamous cell carcinoma is the most common oral malignancy representing up to 80 to 90% of all the malignancies of the oral cavity.[8] Smoking, chewing of pan and tobacco smoking or chewing have been shown to have a casual effect in squamous cell carcinoma. The incidence of oesophageal adeno carcinoma is increasing in India.

In our study all the malignant neoplastic lesions of the esophagus were Squamous cell carcinoma, correlate with the study of Bilal A Sheikh et al.[9]

According to National Cancer Registry, esophageal malignancies rank third in women after malignancies of the breast and cervix.[10]

In our study most common carcinoma of stomach is Adenocarcinoma, correlates with Dr Chhanda Das et al.,[11] Suman Kumar T.C.S. et al.,[12] Rupendra Thapa et al.[13]

In our study Males are predominantly effected than females correlate with the study of Sharma et al.[14]

In our study the most common neoplastic lesions of the large intestine is Adenocarcinoma correlates with the study of Sharma et al.[14]

In our study the most common age group affected by neoplasms is 4th to 6th decade, which is correlates with the study of B. Krishnamurthy et al.[15] The most common age group was 5 to 7 decade in the study conducted by Crawford who also found the common age group to be more than 50 years.[16]

Our study showed a male preponderance. This gender ratio favoring males could be reflective of the fact that males are exposed to more risk factors than females and gastrointestinal malignancies are more common in males according to JC Paymaster et al .[17]

After esophagus colorectal region including anal and canal and rectum was the another most common site for gastrointestinal malignancies of all malignancies which was in concordance to the study conducted by Kulkarni et al.[18] and Kamal et al.[19] In our study Colorectal neoplasms are more common than small intestinal neoplasms, correlates with the study of Venkata Kalyan Nunna et al.[20]

In colorectal neoplasms adenocarcinoma is most common.[14] Though the incidence of adenocarcinoma is on the rise in many countries including India, our study did not prove that, may be partly because of the limited number of patients with esophageal biopsies than those of the stomach and only few cases of malignancy with the total biopsies. SCC of esophagus endoscopically

presented as proliferative and ulceroproliferative lesions in ulcerative and/or stenosis/stricture.

Leiomyosarcoma of jejunum is a rare variety of malignant small bowel tumor.[14]

True smooth muscle tumors are actin and desmin reactive and lack CD117/C-kit. Calponin and h-caldesmonare expressed.[21]

Immunohistochemistry with KIT 17, SMA,Calponin, Caldesmon, Desmin, and GFAP markers resulted that the jejunal tumor has epitheloid, spindle cell morphology with nuclear atypia and pleomorphism,to find the type of tumor.

Because of its relatively large surface area cancer of the GIT are quite common, and are rather difficult to treat because of relative inaccessibility of the portions of the GIT. Today gastrointestinal (GI) pathology is accepted as one of the largest sub-specialties within general histopathology. The primary aim of GI pathology is to provide essential diagnostic and prognostic information allowing physicians and surgeons the best clinical management of the individual patient.

Conclusion

In this study the most common neoplasm is malignant neoplasms.The most common region involving neoplasm is the colorectal region. The most common malignant neoplasm of the GIT is the adenocarcinoma. The neoplasms are most common in males than in females. The most common age group affected by GIT neoplasms is 41-60 Years.

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