

Study to Correlate Histopathological Spectrum of Gastrointestinal Malignant Neoplasm with Demographic Profile of The Patients

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ABSTRACT

Background: To study occurrence, age and sex distribution, to evaluate and to correlate the various histopathological features of surgical specimens of gastrointestinal tract tumours received at pathology department of GMERS medical college, Gandhinagar (Gujarat, India).

Methods: A histopathological study of gastrointestinal tract tumours of 64 cases was carried out on surgical specimens at GMERS medical college, Gandhinagar from January-2018 to May-2019. Specimens were received in 10% formalin. After proper fixation and grossing of the specimens tissue processing was carried out. Blocks were made, sections were cut and stained with Harris Haematoxylin and Eosin stain and observed microscopically.

Result: From the total of 64 cases: 42 Males and 22 Females were affected with peak occurrence in their sixth decade having anatomical distribution in oesophagus 07(10.93%), stomach 09(14.06%), small intestine 12(18.75%), appendix 01(01.56%), colon and rectum 34(53.12%) and anal canal 01(01.56%). Histological types diagnosed were- epithelial 53(82.81%), mesenchymal 06(09.30%), lymphoma 04(06.27%) and neuroendocrine tumor 01(01.56%).

Conclusion: The occurrence of gastrointestinal tumours was highest in the colon and rectum accounting for 53.12% of cases with most common variety being epithelial. The peak age distribution was in the sixth decade. Male to female ratio was 1.9:1. As Gastrointestinal tumours show a wide variation in the morphology, histopathological examination is must for the diagnosis and typing of these tumours.

Keywords: Epithelial, Mesenchymal, Lymphoma, Neuroendocrine Tumours, GIST.

Introduction

Gastrointestinal malignant tumours account for a significant proportion of all neoplasms.^[1] Colorectal cancer ranks third and stomach cancer ranks sixth among all types of cancers worldwide.^[2] Curiously the small intestine is an uncommon site for tumor despite its great length and vast pool of dividing cells. There is world wide variation in the distribution of these neoplasms which appear largely due to exogenous factors rather than genetic.^[3] The various histological types of tumours at different sites of gastrointestinal tract also differ in their incidence and prognosis.

Tumours arising from the mucosa of stomach and intestines predominate over mesenchymal and stromal tumours. Adenocarcinoma constitutes 70% of all malignancies arising in the gastrointestinal tract. Without exception, all tumours are incurable when metastasis exists. However effective treatment in case of lymphoma and stromal tumours is likely to result in cure. This study is undertaken to diagnose various histopathological types of gastrointestinal tumours.

Materials and Methods

A histopathological study of surgical specimens of gastrointestinal tract tumours of 64 cases was carried out

at Histopathology department of GMERS Medical college, Gandhinagar from January 2018 to May 2019.

Specimens were received in 10% formalin. After proper fixation of the specimens, sections were taken from the lesion, its margins, surrounding tissue and lymph nodes if any. It was kept for 24 hours in 10% formalin for proper fixation; subsequently dehydration, clearing and embedding in paraffin wax were carried out. Blocks were made, sections of 3µm thickness were cut and stained with Harris Hematoxylin and Eosin stain and observed microscopically for cellular architecture, perineural and vascular invasions and surrounding areas.

Data acquired from examination of each specimen was tabulated using a performa in systematic sequence. The collected data were analyzed statistically and results obtained were compared to the existing studies in the literature.

Result

Involvement of any site from gastrointestinal tract by malignant neoplasm is possible. In present study, anatomical distribution was in oesophagus 07(10.93%), stomach 09(14.06%), small intestine 12(18.75%), colon and rectum 34(53.12%), anal canal 01(01.56%) and appendix 01(01.56%) as shown in table 1.

Out of 09 cases of gastric tumours, anatomical distributions were in body 03(33.34%), antrum 04(44.45%), pyloric canal 02 (22.23%). Out of 12 cases affecting small intestine, tumours were found in duodenum in 04 cases (33.34%), jejunum 02 cases (18.18%) and ileum 06 cases (54.54%). In 34 cases of colorectal tumours, affected areas were caecum 01 case (02.94%), ascending colon 03 cases (08.82%) and recto-sigmoid colon 30 cases (88.23%).

After detailed histo-morphological (Gross and Microscopic) study, histological types diagnosed were Epithelial 53(82.81%), Mesenchymal 06(09.30%), Lymphoma 04(06.27%) and Neuroendocrine tumor

01(1.56%) as shown in table 2. In differentiation majority of the cases were Adenocarcinoma 46 cases(71.87%), mostly well differentiated Adenocarcinoma, while Squamous cell carcinoma, GIST and Non Hodgkin's Lymphoma constituted 07 cases (10.93%), 06 cases (09.37%) and 04 cases (06.25%) respectively as tabulated in Table 3. Only one case of Carcinoid tumor was reported.

The age and gender wise distribution of Gastrointestinal Tumours is showed in Table 4. The peak age distribution was seen in 6th decade of life with male preponderance having male to female ratio of 1.9:1.

Table 1: Anatomical distribution of Gastrointestinal Tumour.

Site	Number	Percent (%)
Oesophagus	07	10.93
Stomach	09	14.06
Small intestine	12	18.75
Appendix	01	01.56
Colon and rectum	34	53.12
Anal canal	01	01.56
Total	64	100

Table 2: Histological types of Gastrointestinal Tumours.

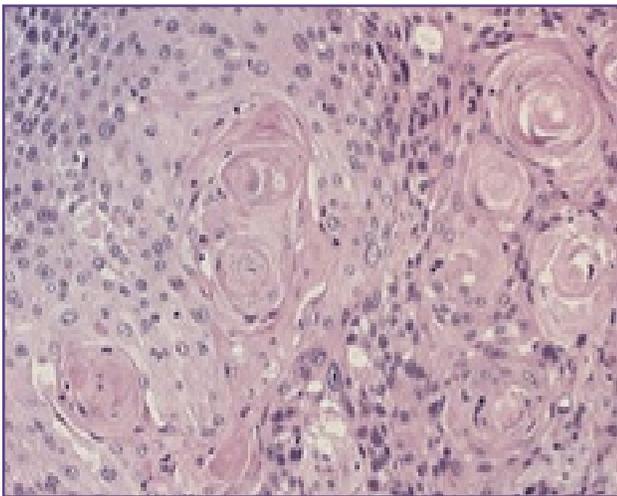
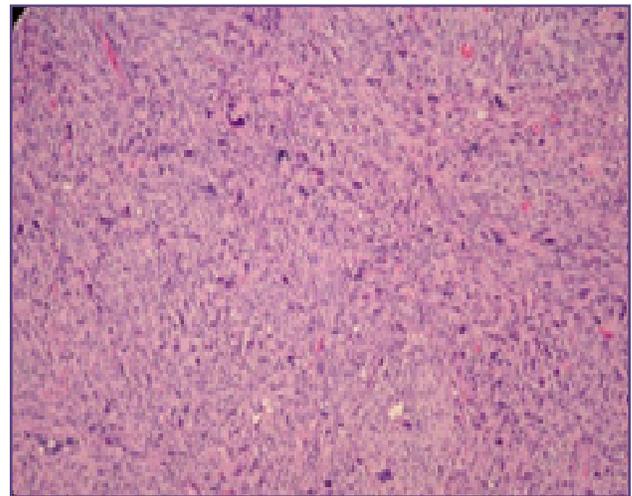
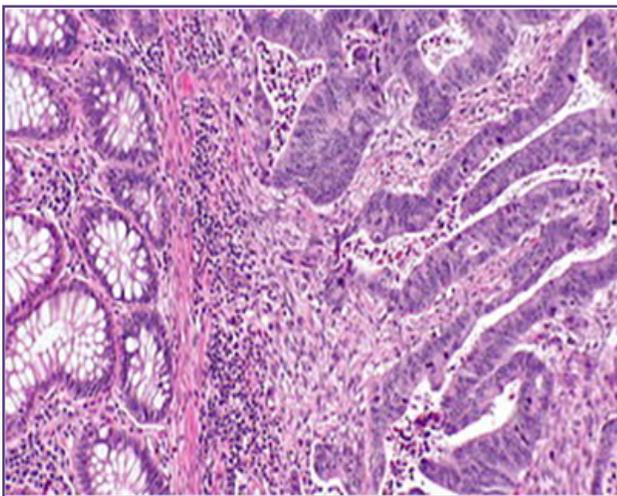
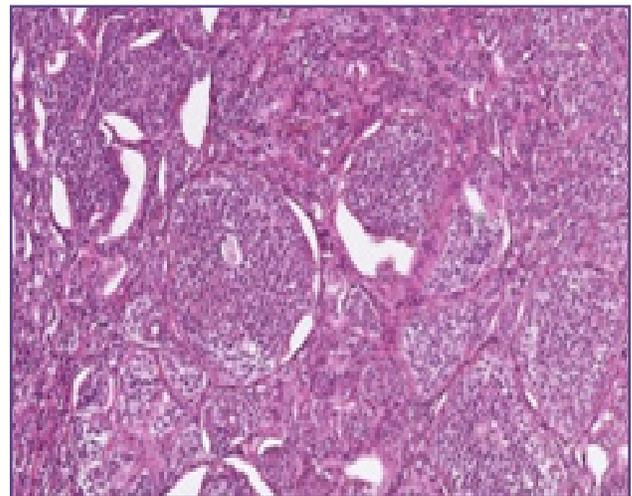
Histological Type	Oesophagus	Stomach	Small Intestine	Appendix	Colorectal	Anal canal	Total No. (%)
Epithelial	10	04	08	-	30	01	53 (82.81%)
Mesenchymal	-	02	-	-	04	-	06 (9.30%)
Lymphoma	-	01	03	-	-	-	04 (6.27%)
Neuroendocrine	-	-	-	01	-	-	01 (1.56%)
Total	10	07	11	01	34	01	64 (100%)

Table 3: Distribution and histo morphology of various GI tumour

S. No	Malignant tumours (Histological Type)	Locations	Differentiation			No. of cases	Total cases (%)
			Well	Moderate	Poor		
1	Adenocarcinoma	Stomach	03	02	01	06	46 (71.87)
		Small intestine	07	01	01	09	
		Colon and rectum	13	16	01	30	
		Anal canal	01	-	-	01	
2	Squamous cell carcinoma	Oesophagus	04	03		07	07 (10.93)
3	GIST(Gastrointestinal Stromal Tumor)	Stomach				02	06 (09.37)
		Colon and rectum				04	
4	Non – Hodgkin's lymphoma	Stomach				01	04 (06.25)
		Small intestine				03	
5	Carcinoid tumor	Appendix				01	01 (01.56)
Total						64	64 (100 %)

Table 4: Age and sex wise distribution of GI tumours.

Age in years	Number of cases (Male) %	Number of cases (Female) %
0 – 10	01 (02.38)	00 (0)
11 – 20	00 (0.0)	01 (04.55)
21 – 30	03 (07.14)	02 (09.09)
31 – 40	04 (09.52)	01 (04.55)
41 – 50	08 (19.04)	04 (18.19)
51 – 60	18 (42.85)	11 (50.00)
61 – 70	07 (16.67)	02 (09.09)
71 – 80	01 (02.38)	01 (04.55)
Total	42 (65.64%)	22 (34.36%)

**Fig. 1: Squamous cell carcinoma – Oesophagus (H & E stain; 40X).****Fig. 2: GIST – Stomach (H & E stain; 10X).****Fig. 3: Colorectal Adenocarcinoma (H & E stain; 40X).****Fig. 4: Carcinoid Tumor – Appendix (H & E stain; 40X).**

Discussion

Gastrointestinal tumours can be seen over a wide range of age (6 Months to 80 Years). In the present study, highest distribution was found in the 6th decade, which was consistent with the study by Assem O. et al,2000^[4] and Patel Mandakini et al,2012.^[5] However, in the studies done by Prabhakar et al^[6] and Mohammad et al^[7], the peak age distribution was in 5th and 7th decade respectively. A male predominance was observed in this study with a male to female ratio of 1.9:1 which is consistent with study by Shahid Jamal et al, 2005.^[8] While Male to Female ratio is 1.67:1 and 1.39:1 in studies by Assem O. et al,2000^[4] and Patel Mandakini et al,2012^[5] respectively.

The anatomical site most commonly involved was Recto-Sigmoid region, constituting 53.12% of all GI tumours which is consistent with study by Leena et al.^[9], Jamal et al.^[10] and Thomas and Sobin.^[11] However in study by Abdul Kareem et al,2011^[12] majority of cases were of transverse colon. The histological types of gastrointestinal tumours showed immense variation. However adenocarcinoma was the commonest tumor all over the gastrointestinal tract. The present study also showed similar findings.

In the oesophagus, SCC was the predominant malignant tumor. Similar finding is noted in the studies of Jamal et al. ^[10] and Thomas and Sobin.^[11] In the present study, not a single case of oesophageal adenocarcinoma was found. This could possibly be explained by the variability of predisposing factors among different population.

Among the gastric tumours, adenocarcinoma was the most predominant type. These findings were in conformity with studies conducted by Devi and Suvarna,^[13] Mohammad et al,^[7] and Lavanya and Sreelatha,^[14] However, higher incidence of lymphoma observed in study conducted by Lavanya and Sreelatha^[14] as compared to our study.

Adenocarcinoma was predominant tumor in small intestine which is closely correlated with Mohammad et al^[7] study. As compared to Zhou et al.^[15] we found only one case of lymphoma in small intestine.

In our study, colorectal adenocarcinoma was the commonest malignant tumor consistent with the studies of Abdul Kareem et al. ^[12] and Lavanya and Sreelatha.^[14] Mucinous and signet-ring carcinoma in colorectal region comprised 10-20% in different studies^[12,14] including ours.

Conclusion

GI tumours were more common in the sixth decade. Males outnumbered females with a male to female ratio of 1.9:1. Predominantly affected site was the colorectal

region. Overall, adenocarcinoma was the predominant type. Gastrointestinal tumours show a wide variation in the morphology making histopathological examination crucial for the diagnosis and typing of these tumours. As early diagnosis and treatment is beneficial for better management and is imperative in providing better quality of life to the patient, histopathological examination is must.

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