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Original Research Paper

Pathology

HISTOPATHOLOGICAL SPECTRUM OF GASTROINTESTINAL LESIONS -5 YEARS STUDY IN TERTIARY CARE HOSPITAL

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ABSTRACT

A total of 12937 surgical specimens were received during the study period. Twenty one hundred (2100) cases of GIT tumors were diagnosed histologically. One thousand nine hundred eighty two (1982) GIT lesions were diagnosed as non- neoplastic, while one hundred eighteen (118) were diagnosed as neoplastic. Fifty- theee (53) tumors were diagnosed as benign neoplastic lesions, while sixty five (65) tumors were diagnosed as malignant neoplastic. Prevalence rate of 2100 GIT lesions was 16.23% surgical specimens. Prevalence rate of non- neoplastic lesions was 15.32%, neoplastic GIT lesions was 0.91% with benign GIT lesions 0.41% and malignant GIT lesions 0.50%. Youngest patient was a 4-year-old boy, while oldest patient was 90 years old male. Highest number of GIT tumors were seen in the age group 10- 19 years and 20- 29 years. Male to female ratio was 2.65:1. Majority of non- neoplastic and neoplastic lesions were observed in male subjects. Appendix was the most common site for non-neoplastic lesions. Large intestine was the most common site for benign and oesophagus for malignant tumors of GIT, followed by stomach and large intestine.48 cases of meckels diverticulum were observed.Majority of the malignant tumours of the oesophagus were squamous cell carcinoma, followed by adenocarcinoma and adenosquamous carcinoma.Chronic superficial gastritis was the most common non- neoplastic lesion of stomach. Hyperplastic or inflammatory polyp were the most common polyps of the stomach. Adenocarcinoma was the most common malignant gastric tumour, followed by GIST. Non-specific inflammatory lesion was the most common non-neoplastic lesion of small intestine followed by ischemic congestive pathology followed by granulomatous pathology.Tubular adenoma and hyperpastic polyps were the most common polyps of the small intestine. NO malignant small intestine lesion was observed.Acute appendicitis was the most common non-neoplastic lesion of appendix. 2 cases of mucinouscystadenoma were the benign tumours observed in appendix. Carcinoid was the most common malignant lesion of the appendix, followed by mucinous cystadenocarcinoma. Non-specific inflammation was the most common non-neoplastic lesion followed by colitis followed by hirschsprung disease in large intestine. Juvenile/retention polyp were the most common polyps of the large intestine, followed by hyperplastic polyp, tubular adenoma, tubullovillous adenoma.Majority of the malignant large intestinal tumours were adenocarcinoma, followed by non-Hodgkin's lymphoma and GIST. Haemorrhoids followed by fistula-in- ano were the most common non –neoplastic lesions of the anal canal. Squamous cell carcinoma was the most common malignant anal canal tumour.

KEYWORDS :

INTRODUCTION:

Gastrointestinal tract which extends from oesophagus to anus, spanning a length of 8 metres, is a common site for numerous pathological processes both non- neoplastic and neoplastic. Among all lesions of the body, Gastrointestinal tract constitutes 5.38% with 28.72% of malignant tumors. There is wide range of pathologic lesions which affect upper gastrointestinal tract like infectious diseases, inflammatory disorder, mechanical, toxic and physical reactions including radiation injury and neoplasms. Upper gastrointestinal spectrum of lesions include chronic nonspecific oesophagitis, barretts oesophagus, dysplasia, leiomyoma, squamous cell carcinoma, adenocarcinoma, nonspecific gastritis, H-pylori associated gastritis, intestinal metaplasia, gastric ulcer, polyp, eosinophillic gastritis, dysplasia, nonspecific duodenitis, celiac sprue, adenocarcinoma, MALToma. Intestinal spectrum of non-neoplastic lesions include non specific inflammation, gangrene, ulceration, tuberculosis, inflammatory bowel disease, necrotising enterocolitis, intussusception, warts, haemorrhoids. Cancers of large bowel and anus account for 3% of all the malignant diseases. Colorectal carcinoma is the commonest malignancy of the gastrointestinal tract followed by gastric and oesophageal carcinoma. Benign tumors include adenoma, leiomyoma, fibroma, lipoma, haemangioma, neurofibroma, lymphangioma. Adenoma is the most common among the benign tumors . Polyps constitute an important tumorous lesion in the whole GIT tract. Polyps is a clinical term or gross description of any circumscribed tumor or growth that projects above the surrounding mucosa. Polyps may be neoplastic, inflammatory or hamartomatous; only by histologic examination can one be certain of their nature and clinical significance. Malignant tumors affecting the gastrointestinal tract include squamous cell carcinoma, adenocarcinoma, Carcinoids, gastrointestinal stromal tumors, lymphoma, sarcomatoid carcinoma, verrucous carcinoma and malignant melanoma. Adenocarcinoma is the most common tumor representing 70% of all malignancies arising in the GIT.

Other miscellaneous tumors involving gastrointestinal tract are inflammatory myofibroblastic tumors, spindle cell lesions of the intestines, gangliocytic paraganglioma, angioma, perivascular epithelioid cell differentiation (PECOMA) and lipomas.

Tumors metastatic to gastrointestinal tract are prostate cancer, malignant melanoma, leukaemia and carcinoma. This study was undertaken to study the prevalence and histopathological features of neoplastic lesions of GIT.

MATERIAL AND METHODS:

All gastrointestinal tumors signed out in the Department of Pathology from Nov 2012 to Nov 2016 were retrieved from surgical pathology files and consult files of Govt Medical Jammu. In total 2100 cases were identified over a period of five years. Haematoxylin and eosin stained sections of 4µm thickness along with appropriate special stains were re-examined in all cases to evaluate the following histologic features : Pattern of growth, degree of differentiation, histologic pattern of tumor, nuclear characteristics, mitotic activity, tumor necrosis, haemorrhage and presence of chronic inflammatory cells. Clinical features and follow up data were obtained from consult files and referring surgeons. Statistical analysis was performed using Fisher exact test. This study was approved by Institutional ethics committee of Govt. medical college Jammu.

RESULTS:

Total number of surgical specimens received in the Postgraduate Department of Pathology, Government Medical College, Jammu during 5 years were 12937. Of these specimens 2100 were GIT lesions. Prevalence of GIT tumors was 16.23/1000 surgical specimens. Prevalence of non- neoplastic GIT lesions was 15.23/1000 of total surgical specimens.Prevalence of neoplastic GIT lesions was 0.91/1000 of surgical specimens.

The clinical data of study group is summarised in tables 1, 2, 3 and 4. Of the total 2100 patients 1982 were male and 118 were female. Male female ratio was 2.65:1. Non- neoplastic lesions were common among patients in 10- 19 years. Benign tumors were common in patients below 50 years and malignant beyond 35 years. Commonest site of GIT non- neoplastic lesion was Appendix, Large intestine for benign and oesophagus for malignant tumors. Neoplastic lesions were analysed based on the segment involved and were divided into benign and malignant categories.

Table 1.Age and sexwise distribution of gastrointestinal lesions

Age group (in years)	Male		Female		Total	
	No.	%	No.	%	No.	%
<10	158	7.52	53	2.52	211	10.05
10 – 19	378	18.00	144	6.86	522	24.86
20 – 29	328	15.62	121	5.76	449	21.38
30 – 39	242	11.52	80	3.81	322	15.33
40 – 49	172	8.19	77	3.67	249	11.86
50 – 59	115	5.48	58	2.76	173	8.24
60 – 69	80	3.81	27	1.29	107	5.10
70 – 79	38	1.81	11	0.52	49	2.33
>80	14	0.67	4	0.19	18	0.86
Total	**1525**	**72.62**	**575**	**27.38**	**2100**	**100.00**
Mean age ± Standard deviation (Range)	**29.63 ± 18.14 (4 days – 85 years)**		**30.53 ± 17.61 (5 months – 90 years)**		**30.08 ± 17.87 (4 days – 90 years)**	
Male to female ratio	**2.65:1**					

Table 2.Agewise distribution of non-neoplastic and neoplastic gastrointestinal lesions

Age group (in years)	Non-neoplastic		Neoplastic		Total	
	No.	%	No.	%	No.	%
<10	176	8.38	35	1.67	211	10.05
10 – 19	514	24.48	8	0.38	522	24.86
20 – 29	444	21.14	5	0.24	449	21.38
30 – 39	313	14.90	9	0.43	322	15.33
40 – 49	235	11.19	14	0.67	249	11.86
50 – 59	155	7.38	18	0.86	173	8.24
60 – 69	92	4.38	15	0.71	107	5.10
70 – 79	38	1.81	11	0.52	49	2.33
>80	15	0.71	3	0.14	18	0.86
Total	**1982**	**94.38**	**118**	**5.62**	**2100**	**100.00**

Table 3.Genderwise distribution of non-neoplastic and neoplastic gastrointestinal lesions

Gender	Non-neoplastic		Neoplastic		Total	
	No.	%	No.	%	No.	%
Male	1432	72.25	93	78.81	1525	72.62
Female	550	27.75	25	21.19	575	27.38
Total	**1982**	**100.00**	**118**	**100.00**	**2100**	**100.00**

Table 4.Site distribution of gastrointestinal lesions

Site	Non-neoplastic		Neoplastic				Total	
			Benign		Malignant			
	No.	%	No.	%	No.	%	No.	%
Oesophagus	1	0.05	0	0.00	30	46.15	31	1.48
Stomach	32	1.61	1	1.89	21	32.31	54	2.57
Small intestine	188	9.49	2	3.77	0	0.00	190	9.05
Large intestine	42	2.12	48	90.57	9	13.85	99	4.71
Appendix	1491	75.23	2	3.77	3	4.62	1496	71.24
Meckel's diverticulum	48	2.42	0	0.00	0	0.00	48	2.29
Anal canal	180	9.08	0	0.00	2	3.08	182	8.67
Total	**1982**	**100.00**	**53**	**100.00**	**65**	**100.00**	**2100**	**100.00**

Table 5. Types of gross oesophagus specimen

Oesophagus specimen	Non-neoplastic		Neoplastic				Total	
			Benign		Malignant			
	No.	%	No.	%	No.	%	No.	%
Endoscopic oesophageal biopsies	1	100.00	0	0.00	20	66.67	21	67.75
Partial oesophagectomy	0	0.00	0	0.00	4	13.33	4	12.90
Oesophagectomy	0	0.00	0	0.00	6	20.00	6	19.35
Total	**1**	**100.00**	**0**	**0.00**	**30**	**100.00**	**31**	**100.00**

Table 6. Distribution of malignant tumours of oesophagus (n=29)

Malignant tumours	Total	
	No.	%
Well differentiated squamous cell carcinoma	12	40.00
Moderately differentiated squamous cell carcinoma	10	33.33
Poorly differentiated squamous cell carcinoma	2	6.67
Well differentiated adenocarcinoma	2	6.67
Moderately differentiated adenocarcinoma	1	3.33
Poorly differentiated adenocarcinoma	1	3.33
Infilterating papillary adenocarcinoma	1	3.33
Adenosquamous carcinoma	1	3.33
Total	**30**	**100.00**

Table 7. Morphological patterns of malignant oesophageal tumours (n=30)

Morphological pattern		Squamous cell carcinoma (n=24) No. (%)	Adenocarcinoma (n=5) No. (%)	Adenosquamous carcinoma (n=1) No. (%)
Gross pattern	Well circumscribed	8 (33.33)	0	0
	Infilterative	16 (66.67)	0	1 (100.00)
Degree of differentiation	Well	12 (50.00)	3 (60.00)	0
	Moderate	10 (83.33)	1 (20.00)	1 (100.00
	Poor	2 (16.67)	1 (20.00)	0
Histological pattern	Solid	24 (100.00)	1 (20.00)	1 (100.00)
	Glandular	0	3 (60.00)	0
	Papillary	0	1 (20.00)	0
Nuclear pleomorphism	Mild	6 (25.00)	2 (40.00)	0
	Moderate	16 (66.67)	1 (20.00)	1 (100.00)
	Masked	2 (13.33)	2 (40.00)	0
Nucleoli	Conspicuous	14 (58.33)	1 (20.00)	1 (100.00)
	Inconspicuous	10 (41.67)	4 (80.00)	0
Mitosis/ hpf	0 – 1	12 (50.00)	1 (20.00)	0
	2 – 4	8 (33.33)	3 (60.00)	1 (100.00)

	>5	4 (16.67)	1 (20.00)	0
Tumor necrosis	Present	3 (12.50)	1 (20.00)	1 (100.00)
	Absent	21 (87.50)	4 (80.00)	0
Haemorrhage	Present	4 (16.67)	1 (20.00)	0
	Absent	20 (83.33)	4 (80.00)	1 (100.00)
Inflammatory cells	Present	14 (58.33)	4 (80.00)	1 (100.00)
	Absent	10 (41.67)	1 (20.00)	0

Table 8. Types of gross stomach specimen (n=54)

Gastric specimen	Non-neoplastic		Neoplastic				Total	
			Benign		Malignant			
	No.	%	No.	%	No.	%	No.	%
Endoscopic gastric biopsy	32	100.00	1	100.00	11	52.38	44	81.48
Partial gastrectomy	0	0.00	0	0.00	7	33.33	7	12.96
Gastrectomy	0	0.00	0	0.00	3	14.29	3	5.56
Total	**32**	**100.00**	**1**	**100.00**	**21**	**100.00**	**54**	**100.00**

Table 9. Distribution of non-neoplastic lesions (n=32)

Non-neoplastic lesions	No.	%
Chronic superficial gastritis	29	90.63
Chronic superficial gastritis with activity	2	6.25
Trichobezoar	1	3.12
Total	**32**	**100.00**

Table 10.Distribution gastric lesions (n=22)

Gastric lesions		No.	%
(n=1)	Hyperplastic polyp	1	100.00
Malignant (n=21)	Adenocarcinoma	20	95.24
	GIST	1	4.76

Table 11. Morphological patterns of malignant gastric tumours (n=21)

Morphological pattern		Adenocarcinomas (n=20)		
		Intestinal type (n=17) No. (%)	Diffuse type (n=3) No. (%)	GIST (n=1) No. (%)
Gross pattern	Exophytic	11 (64.71)	0	1 (100.00)
	Ulcero infilterative	6 (35.29)	3 (100.00)	0
Degree of differentiation	Well	6 (35.29)	0	0
	Moderate	8 (47.06)	0	1 (100.00)
	Poor	3 (17.65)	3 (100.00)	0
Histological pattern	Solid	3 (17.65)	3 (100.00)	1 (100.00)
	Glandular	14 (82.35)	0	0
	Papillary	0	0	0
Nuclear pleomorphism	Mild	3 (17.65)	0	0
	Moderate	13 (76.47)	2 (66.67)	1 (100.00)
	Severe	1 (5.88)	1 (33.33)	0
Nucleoli	Conspicuous	4 (23.53)	2 (66.67)	0
	Inconspicuous	13 (76.47)	1 (33.33)	1 (100.00)
Mitosis/ hpf	0 – 1	8 (47.06)	0	1 (100.00)
	2 – 4	7 (41.18)	3 (100.00)	0
	>5	2 (11.76)	0	0
Tumor necrosis	Present	2 (11.76)	2 (66.67)	0
	Absent	15 (88.24)	1 (33.33)	1 (100.00)
Inflammatory cells	Present	15 (88.24)	3 (100.00)	0
	Absent	2 (11.76)	0	1 (100.00)
Desmoplasia	Present	2 (11.76)	2 (66.67)	0
	Absent	15 (88.24)	1 (33.33)	1 (100.00)

Table 12. Types of gross intestinal specimens

Intestinal specimen		Biopsy	Specimen
Small intestine	Duodenum	29	0
	Jejunum	5	15
	Ileum	17	124
Large intestine	Colon	12	36
	Rectum	0	51*

*including 48 polypectomy; **Haemorrhoidectomy and fistulectomy

Table 13. Non-neoplastic lesions of small intestine (n=188)

Non-neoplastic lesions	No.	%
Non-specific inflammatory pathology	135	71.81
Ischaemic congestive pathology	32	17.02
Granulomatous	11	5.85
Intussusception	5	2.66
Celiac disease	4	2.13
Enteric enteritis	1	0.53
Total	**188**	**100.00**

Table 14. Polyps of small intestine (n=2)

Polyps	No.	%
Tubular adenoma	1	50.00
Hyperplastic polyp	1	50.00
Total	**2**	**100.00**

Table 15. Non-neoplastic lesions of large intestine (n=42)

Non-neoplastic lesions	No.	%
Non-specific inflammatory pathology	33	78.57
Colitis	4	9.52
Hirschsprung disease	3	7.14
Volvulus	2	4.76
Total	**42**	**100.00**

Table 16. Polyps in large intestine (n=48)

Polyps	No.	%
Juvenile rectal polyp	44	91.67
Hyperplastic polyp	2	4.17
Tubular adenoma	1	2.08
Tubulo villous adenoma	1	2.08
Total	**48**	**100.00**

Table 17. Neoplastic malignant lesions of large intestine (n=9)

Neoplastic malignant lesions	No.	%
Adenocarcinoma	7	77.78
NHL	1	11.11
GIST	1	11.11
Total	**9**	**100.00**

Table 18. Non-neoplastic lesions of appendix (n=1491)

Non-neoplastic lesions	No.	%
Acute	1458	97.79
Chronic	32	2.15
Granulomatous	1	0.07
Total	1491	100.00

Table 19. Neoplastic benign and malignant lesions of appendix (n=4)

Neoplastic lesions	No.	%
Benign:		
Mucinuous cystadenoma	2	100.00
Malignant:		
Mucinuous cystadenoma carcinoma	1	25.00
Carcinoid	2	75.00
Total	**5**	**100.00**

Table 20. Non-neoplastic lesions of anal canal (n=180)

Non-neoplastic lesions	No.	%
Fistula-in-ano	57	31.67
Haemorrhoids	119	66.11
Non-specific inflammatory pathology	3	1.67
Anal papillae	1	0.55
Total	180	100.00

Table 21. Distribution of malignant tumours of anal canal (n = 2)

Neoplastic malignant lesions	No.	%
Squamous cell carcinoma	1	50.00
Basaloid carcinoma with focal squamous differentiation	1	50.00

DISCUSSION

The present study was conducted over a period of 5 years (4 years retrospective and 1 year prospective) in the Postgraduate Department of Pathology, Government Medical College, Jammu. A total of 12937 surgical specimens were received during this period, out of which 2100 GIT specimens were diagnosed histologically comprising of non-neoplastic and neoplastic lesions. GIT specimens constituted 16.23% (n=2100) of all surgical specimens received during the course of study. In their study on GIT lesions, **Das C *et al.* (2016)** observed the prevalence of GIT lesions to be 2.34% of all the surgical specimens, which is not in accordance with our study. This may be attributable to large number of appendectomy specimens included in our study. In the present study, the male to female ratio for all GIT lesions was observed to be 2.65:1. Majority of non-neoplastic and neoplastic lesions were observed in male subjects (72.25%) and (78.18%) respectively while in females, non-neoplastic and neoplastic lesions were 27.75% and 21.19%. In their study on GIT lesions, **Das C *et al.* (2016)** observed the male:female ratio of 2.4:1, majority of the GIT lesions 514 (24.48%) were observed in patients 10-19 years of age. Amongst the lesions of GIT, 71.24% were located in appendix, followed by 9.05% in small intestine and 8.67% in anal canal in the present study. **Prasaad PR *et al.* (2016)** also observed appendix to be the most common specimen received in their study. **Thakur RY *et al.* (2016)** also observed inflammatory lesions to be commonest non-neoplastic lesions (91.0%). Acute appendicitis and chronic appendicitis were the most common inflammatory lesions (88.4%). Amongst the benign tumours of GIT, most were located in large intestine 48 (90.57%). Juvenile/retention polyps of the colorectum were the most common accounting for 44 (91.67%). Majority of these polyps were seen in children. **Sheikh BA *et al.* (2015)** in his study on endoscopic biopsies observed M:F ratio of 1:9. Stomach biopsies were commonly received in their study 64.8% followed by oesophageal biopsies including GE junction (33.15%), followed by biopsies from duodenum (2.04%). In our study; stomach biopsies constituted 46.80% followed by duodenal biopsies and oesophageal biopsies (30.85%) each. Squamous cell carcinoma (44.26%) was the most common malignancy of GIT, followed by adenocarcinoma (42.62%) and mucinuous carcinoma (4.92%). Oesophagus site was involved in 30 (47.62%) malignant cases. Thakur RY et al (2016) observed colorectal cancers as most common malignancy (61.5%) followed by oesophagus (18.8%), stomach (7.5%), small intestine (1.8%). The present study included 30 malignant tumours of oesophagus. Squamous cell carcinoma was the most common malignant tumor of the oesophagus accounting for 24 cases(80%) out of the 30 cases, mostly involving the middle or the lower-third of the oesophagus. Majority of these were well to moderately differentiated squamous cell carcinoma. 5 cases(17%) of adenocarcinoma and 1 case(3%) of adenosquamous carcinoma were also observed. The present study presents a good concordance with study of **Memon F *et al.* (2015)** who also observed that most of lesions of oesophagus were malignant (78.6%). **Popli V *et al.* (2016)** observed that most common lesions of oesophagus were malignant (66.67%) followed by premalignant (23.3%), inflammatory (6.7%) and normal (4.9%). The most common malignancy was squamous cell carcinoma of middle one third of the oesophagus followed by lower one third of the oesophagus. **Basnet *et al.* (2009**) also reported squamous cell carcinoma as the most common oesophageal malignancy accounting for 72.72% of the cases, followed by small cell carcinoma with 18.18% of the cases and adenocarcinoma with 9.1% of the cases. 54 cases of the stomach comprising of 32 non-neoplastic and 21 Neoplastic lesions were observed during the period of this study. The most common non – neoplastic histopathological diagnosis being inflammatory. Among the non – neoplastic gastric lesions; Chronic superficial Gastritis was commonest which is comparable to the study conducted by **Abilash et al. (2016). Vijayabasker MKR et al. (2016)** also observed chronic superficial gastritis as most common gastric lesion**. Popli V *et al.* (2016**) also observed most common non – neoplastic lesion in stomach being inflammatory (60%) followed by malignant (19.3%), normal (7.2%) and (1.2%) premalignant. **Sheikh BA *et al.* (2015)** in his study also observed Gastritis as most frequently diagnosed inflammatory lesion while Adenocarcinoma stomach comprised most frequently diagnosed malignant lesion. Hyperpastic polyp was observed as the common benign polyps of the stomach. **Morais *et al.* (2007)** in their independent studies on gastric polyps concluded that hyperplastic gastric polyps were the most common benign polyps of the stomach, that these were often associated with chronic active gastritis intestinal metaplasia and *H. pylori* infection and they could harbour adenomatous changes. **Basnet *et al.* (2009)** also observed adenocarcinomas to be the most common (88.4%) malignant tumor of the stomach, followed by GIST (8.98%) and NHL (2.56%). The present study, included cases (of all malignant tumours of GIT) of GIST with 1 case each of stomach and large intestine. Both were moderately cellular tumours composed of oval to spindle cells with moderate nuclear pleomorphism and scant mitosis and were placed in the intermediate risk category. In the current study, the small intestine was observed to be an uncommon site for both benign and malignant tumours. Non–neoplastic lesions constituted 9.44% of total. The most common site involved was ileum. Inflammatory lesions predominated. **Chennakeshaviah GRP *et al.* (2017**) in their study on small intestinal lesions observed 57.25% cases as non – neoplastic and 42.75% as neoplastic . Patients in 5^{th} – 6^{th} decade of life were affected showing male predominance. The most common site involved was ileum (42.45%). **Basnet *et al.* (2009)** observed small intestinal tumours to respectively comprise of 5% of all GI malignancies unlike present study where no malignant lesion was observed in small intestines. **Mahalingashetti PB *et al.* (2016)** in their study on intestinal resections at rural tertiary care centre observed that ischaemic bowel disease and perforation were common in small intestine and adenocarcinoma in large intestine.

Appendix accounted for 71.24% of the gastrointestinal lesions in

the current study. Out of these, 97.79% cases of acute appendicitis, 2.15% cases of chronic appendicitis were observed, 0.07% cases of granulomatous appendicitis were included in the study. Neoplastic lesions comprised of 2 cases of mucinous cystadenoma, one case of mucinous cystadenocarcinoma and two cases of carcinoids – 1 case of tubular carcinoid and 1 case of classical carcinoid. Though one of the carcinoids was of the classical insular type, it was kept in the malignant category due to its invasive properties and metastatic potential. Thus, carcinoid was the commonest tumour of the appendix accounting for 40% appendiceal tumours. **Sharma S et al. (2014)** in their study on appendectomy specimens observed 98.6% non – neoplastic and 1.4% neoplastic lesions. Histopathological diagnosis of acute appendicitis was made in 64% of cases. **Chawda HK et al. (2015)** also observed acute inflammation in 57.32%, chronic inflammation in 39.52%, granulomatous in 0.71%, tumor and tumor like lesions in 2.14%, diverticulosis in 0.2%. **Moertal et al. (1968)** and also observed carcinoids to be the most common tumours of the appendix, seen in 1 in every 300 routine appendectomies.

In the present study, in large intestine among non–neoplastic lesions inflammatory lesions were commonly observed. There were 3 cases (7.14%) of Hirschsprung disease. All 3 were less than 10 years old. Youngest was 4 days old neonate. **Rescoria FJ et al. (1992)** stated that 80% cases of Hirschsprung disease are males with 80% cases diagnosed during first year of life and 10% first present in adults.

Juvenile/retention polyps were the most common (91.67%), followed by Hyperplastic polyp (4.17%), tubular adenoma (2.08%) and tubulovillous adenoma (2.08%). The adenomas depicted mild to moderate dysplasia. Adenocarcinoma with 77.78% of the cases, was the most common colorectal malignancy followed by NHL and GIST each accounting for (11.11%). Majority of the carcinomas were well to moderately differentiated with a glandular pattern and variable amount of mucin secretion. 1 case of mucinous carcinoma was observed. Histologically malignant glands surrounded by lakes of extra cellular mucin were seen with the mucinous foci constituting more than half of the tumor mass. The tumours presented grossly as diffuse infiltration of the colonic wall. 2 cases showed predominantly papillary and 4 showed predominantly tubular patterns of growth.

Muto *et al.* (1987) in their study on colorectal polyps observed their study observed that 80% of gastrointestinal polyps were located in the large intestine, majority being in the rectosigmoid colon. Juvenile polyp was the most common histological type with a mean age of 6.8 years. The findings of this study are in close agreement to those of the current study **Sulegaon R *et al.* (2015)** in their study on large intestinal lesions observed 38 cases of non- neoplastic and 77 cases of neoplastic lesions. The non–neoplastic lesions included congenital anomalies, infective and ischaemic lesions while neoplastic included benign and malignant lesions. Acute self limiting colitis comprised most of non–neoplastic lesions, common in 3rd to 6th decade with male predominance. Benign neoplastic lesions (Juvenile polyps) were common in 1st decade and malignant in 4th to 7th decade. Adenocarcinoma was most common neoplastic malignant lesion.

Among lesions in anal canal, non-neoplastic lesions were found to be common. Haemorrhoids (66.11%) was common followed by Fistula in ano (31.67%); Squamous cell carcinoma was the most common malignant neoplastic lesion. **Sulegaon R *et al.* (2015)** in their study also found non –neoplastic lesions to be common (85.94%). In neoplastic lesions, squamous cell carcinoma was found to be common.

It is evident from the discussion that the observations and analysis of the present study provide a fair insight into the morphological patterns of various gastrointestinal lesions prevalent in our set up. The results also allow a reliable evaluation of the prevalence of these lesions in our institution and these can be safely extrapolated to the general population as this institution is the principal only tertiary care institution in this region, catering to the entire population.

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