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HISTOPATHOLOGICAL SPECTRUM OF NON-NEOPLASTIC AND NEOPLASTIC LESIONS OF INTESTINE

Histopathology

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ABSTRACT

Introduction: The small intestine and large intestine are affected by a wide array of diseases ranging from developmental anomalies, inflammatory diseases, malignant lesions etc. **Aims And Objectives:** The aim of this study was to evaluate the histopathological spectrum of non-neoplastic and neoplastic lesions of intestine. **Methodology:** A study was conducted in Department of Pathology in JLN Medical College, Ajmer from November 2022 till December 2023. All resected specimens were fixed in 10% formalin. Gross features of specimens were noted and multiple sections taken. After routine tissue processing, sections were stained with hematoxylin and eosin. **Results:** Out of 572 patients, non-neoplastic lesions were seen in 500 (87.4%) patients while neoplastic lesions were seen in 72 (12.5%) patients. Amongst non-neoplastic lesions, inflammatory pathology was most common, seen in 351 (70.2%) cases. Followed by Ischemic bowel disease seen in 33 (6.6%) and 22 (4.4%) each of Inflammatory bowel disease and tubercular pathology. Congenital abnormalities were noted in 11 (2.2%) cases. Amongst neoplastic lesions, adenocarcinoma was most common, seen in 53 (74%) cases, followed by three (4.1%) cases each of squamous cell carcinoma and non-Hodgkin's Lymphoma. **Discussion/ Conclusion:** In intestine amongst non-neoplastic lesions, Inflammatory lesions followed by ischemic bowel disease were most common. Whereas in neoplastic lesions, adenocarcinoma was commonest. Clinical, radiological and gross examinations are not enough to differentiate lesions affecting intestine, especially neoplastic lesions. Histopathological study is the gold standard for diagnosis of intestinal lesions. IHC and other ancillary investigations as per requirement aid further to come to final diagnosis.

KEYWORDS

Intestinal lesion, non neoplastic, neoplastic, Adenocarcinoma

INTRODUCTION:

The small intestine and large intestine account for most of the gastrointestinal tract (GI) length and are the sites of a broad array of diseases[1]. Disorders of the intestine can be seen in both the extremes of life, from early childhood to elderly[2].

The intestine frequently encounters non-neoplastic and neoplastic processes[1]. Non neoplastic lesions are mainly found in small intestine while large intestine harbours most of the neoplastic lesions[3]. Inflammation of the small intestine is relatively common but tumors are rare, accounting for less than 5% of all gastrointestinal tumors but recently there is rise in incidence[4]. Adenocarcinomas and neuroendocrine tumors of small bowel are the most common subtypes, accounting for approximately 40% of small bowel tumors[5]. However, the commonest site of adenocarcinoma is colorectal region.

Clinical features of the diseases affecting small and large intestine includes pain abdomen, abdominal distension, vomiting, change in bowel habits etc. The clinical features may overlap in different disease states[6]. Most of these lesions present vaguely, preventing them from early diagnosis and treatment often leading to grave complications[2]. Clinical, radiological and gross examinations are not enough to differentiate lesions affecting small and large bowel. Many intestinal lesions especially non neoplastic share same clinical background, where characteristic histopathological feature not only suggests specific diagnosis but also reveals the extent and severity of the disease[6]. Especially in cases of polypoid lesions, ulcerative lesions and in dubious lesions on endoscopy histopathology is of utmost importance[7].

This study was conducted to evaluate histopathological spectrum of lesions in intestine, their age, sex distribution and prevalence in our region.

MATERIALS AND METHODS:

An observational study was carried out from November 2022 to December 2023 at Department of Pathology, Jawahar Lal Nehru Medical College and Associated Group of Hospitals, Ajmer. The tissue samples included 174 biopsies and 398 resected specimens of intestine received from various clinical departments. Autolyzed specimens or tissues were excluded from the study. A total of 572 cases were included in present study.

All resected specimens were immediately fixed in 10% formalin for 14-16 hrs. Gross features of specimens noted and multiple sections were taken. Routine tissue processing was done and sections were stained with hematoxylin and eosin. Special stains like Giemsa, Zeihl Neelson, Alcian blue and Periodic Acid Schiff stains were used as and when necessary.

After detailed study of the sections under light microscope, final diagnosis was given.

RESULTS:

The study consisted of 572 cases, with a majority being male (62.7%, N=359) and the remaining being female (37.2%, N=213). Maximum number of cases (19.93%) were seen in Fourth decade followed by Third decade (17.83%), whereas the least affected age group is 9th decade with 9 cases (1.57%) followed by youngest age group (<1yr) with 20 cases (3.49%).The overall mean age was 39.09 years and age range was 1 day to 89 years. (Table 1)

Table 1: Distribution Of Intestinal Lesions According To Age And Sex Of The Patients:

AGE (YEARS)	MALE	FEMALE	TOTAL	PERCENTAGE
<1	9	11	20	3.49
1-10	21	6	27	4.72
11-20	39	21	60	10.48
21-30	62	40	102	17.83
31-40	75	39	114	**19.93**
41-50	55	25	80	13.98
51-60	36	29	65	11.36
61-70	37	33	70	12.23
71-80	17	8	25	4.37
81-90	8	1	9	1.57
TOTAL	**359**	**213**	**572**	**100**

The study examined a total of 572 cases of intestinal lesions, and the overwhelming majority, 87.4% (N=500), were found to be non-neoplastic. In contrast, neoplastic lesions accounted for a relatively small proportion of the total cases, at 12.58% (N=72). (Table 2)

Table 2: Distribution Of Intestinal Lesions According To Type:

INTESTINAL LESIONS	NO. OF CASES MALES	NO. OF CASES FEMALES	TOTAL	PERCENTAGE
NON-NEOPLASTIC	314	186	500	87.41
NEOPLASTIC	45	27	72	12.58
TOTAL	**359**	**213**	**572**	**100**

Among the non-neoplastic lesions, maximum cases were of inflammatory pathology (351 cases) followed by ischemic bowel disease (33 cases). (Table 3)

Amongst benign neoplastic lesions, Juvenile polyp was most common (03 cases). Among malignant neoplastic lesions, Adenocarcinoma (Moderately differentiated) was the most common constituting 50% of malignant cases. This was followed by Poorly differentiated Adenocarcinoma (11 cases) and Mucinous adenocarcinoma (5 cases). Non-Hodgkin's Lymphoma and Squamous cell carcinoma with 3 cases each were also seen. (Table 4)

Table 3: Distribution Of Non-neoplastic Lesions According To Histopathology

TYPE	NO. OF CASES MALES	NO. OF CASES FEMALES	TOTAL	PERCENTAGE
CONGENITAL ABNORMALITIES:				
HIRSCHPRUNG'S DISEASE	2	1	3	0.60
ILEAL ATRESIA	0	1	1	0.20
INTUSSUSCEPTION	0	1	1	0.20
MECKEL'S DIVERTICULAM	5	1	6	1.20
INFLAMMATORY PATHOLOGY	222	129	351	**70.20**
TUBERCULAR PATHOLOGY	9	13	22	4.40
INFLAMMATORY BOWEL DISEASE	12	10	22	4.40
ISCHEMIC BOWEL DISEASE	18	15	33	**6.60**
CELIAC DISEASE	7	12	19	3.80
AMOEBIC COLITIS	1	-	1	0.20
HAEMORRHOIDS	38	3	41	8.20
TOTAL	**314**	**186**	**500**	**100.00**

Table 4: Distribution Of Neoplastic Lesions According To Histopathology:

	NO. OF CASES MALES	NO. OF CASES FEMALES	TOTAL	%
BENIGN NEOPLASTIC LESIONS				
HYPERPLASTIC POLYP	-	1	1	1.38
JUVENILE POLYP	3	-	3	**4.16**
ADENOMATOUS POLYP	1	-	1	1.38
SQUAMOUS PAPILLOMA	1	-	1	1.38
SCHWANOMMA	-	1	1	1.38
LIPOMA	1	-	1	1.38
TOTAL	**6**	**2**	**8**	**11.11**
MALIGNANT NEOPLASTIC LESIONS				
ADENOCARCINOMA				
Well Differentiated Adenocarcinoma	1	2	3	4.16
Moderately Differentiated Adenocarcinoma	23	9	32	**44.44**
Poorly Differentiated Adenocarcinoma	7	4	11	**15.27**
MUCINOUS ADENOCARCINOMA	1	4	5	6.94
METASTATIC DEPOSITS OF ADENOCARCINOMA	-	2	2	2.77
SQUAMOUS CELL CARCINOMA	3	-	3	4.16
NON-HODGKIN'S LYMPHOMA	1	2	3	4.16
HODGKIN'S LYMPHOMA	1	-	1	1.38
GIST	1	1	2	2.77
CARCINOID TUMOR	1	-	1	1.38
MALIGNANT MELANOMA	-	1	1	1.38
TOTAL	**39**	**25**	**64**	**88.88**
TOTAL NEOPLASTIC LESION	**45**	**27**	**72**	**100.00**

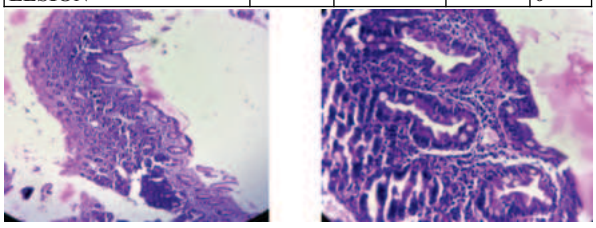

Fig 1: Photomicrograph shows Celiac disease (10x X 10x, 40x X 10x)

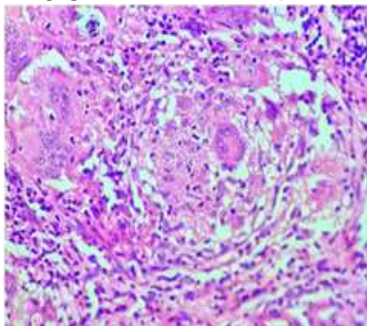

Fig 2: Photomicrograph shows TB Intestine (40x X 10x)

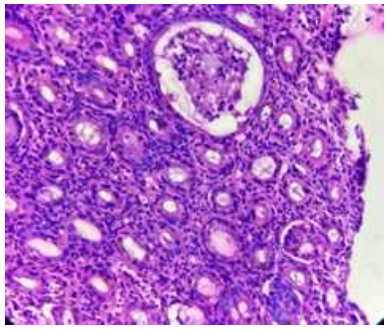

Fig 3: Photomicrograph shows Ulcerative colitis (40x X 10x)

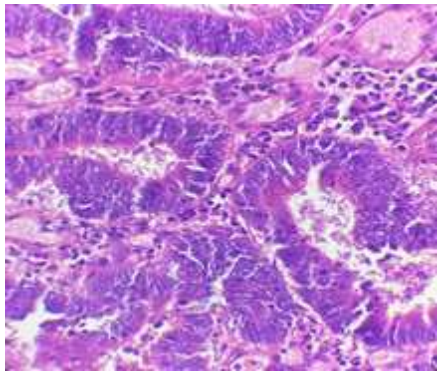

Fig 4: Photomicrograph shows Moderately Differentiated Adenocarcinoma (40x X 10x)

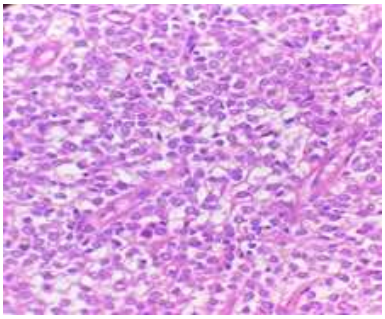

Fig 5: Photomicrograph shows Gist- Epithelioid Type (40x X 10x)

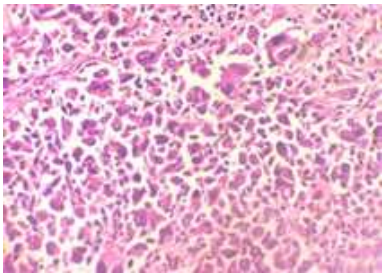

Fig 6: Photomicrograph shows tumor cells of Malignant Melanoma (40x X 10x)

DISCUSSION:

In the present study, male preponderance was seen with M:F ratio 1.68:1. This was in accordance with study done by Pooja Patel et al. (2019)[8], Rasool M et al. (2014)[9] which showed 3.51:1, 1.3 :1. Our study had age range of 1 day to 89 years which was comparable with study of Masgal et al (2018)[2] where the age range was 4 days to 80 years.

The present study examined 572 intestinal lesions, with a majority being non-neoplastic (500, 87.41%) and a smaller proportion being neoplastic (72, 12.58%). The study of Nanavati M, et al. [2014][3], identified 78.5% non-neoplastic and 21.5% neoplastic lesions among 200 cases and Pandya DP et al (2024)[10] which found 94.31% non-neoplastic and 5.68% neoplastic lesions among 88 cases. This demonstrates a predominance of non-neoplastic lesions similar to the present study.

In the present study, Juvenile polyp (4.16%) was the most common benign neoplastic lesion. This was comparable with the study of Mundiya et al (2017)[11] where Juvenile polyp was also the commonest benign neoplastic lesion (10.6%).

In the present study, 64 cases of malignant lesions were seen out of which Adenocarcinoma constituted the maximum number of cases i.e. 53 cases (82.81%). Followed by three cases (4.68%) each of non-Hodgkin's lymphoma, squamous cell carcinoma. These results were in concordance with Sulegaon et al (2015)[12] and Khan et al (2023)[13] where Adenocarcinoma was the most common malignant neoplastic lesion constituting 89.71% and 79.79% lesions respectively. Therefore, Adenocarcinoma stands out as the most prevalent malignant lesion in our region.

This consistency suggests that non-neoplastic lesions are more common than neoplastic lesions in the intestine, across different study populations and sample sizes.[3,10]

CONCLUSION:

Intestinal disorders can affect both the extremes of life, from early childhood to elderly. Current and earlier studies highlight a common observation: a range of intestinal lesions, including both non-neoplastic and neoplastic types, often present with nonspecific symptoms, making accurate diagnosis difficult. The present study emphasizes that histopathology is gold standard in diagnosis of intestinal lesions. This information can be used to formulate plan of action for prevention and early treatment of various intestinal diseases.

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