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Histopathological Evaluation of Non-Neoplastic Lesion of Intestine in Tertiary Care Centre

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Abstract: ***Introduction: Intestine is a principal site where immune system interfaces with a diverse array of antigen present in food and gut microbes. Both the Intestines are frequently affected by infectious and inflammatory disorders. Histopathological study is gold standard to find pattern, frequency, site and diagnosis of intestinal lesion for better outcome of patient. The observational study is carried out in histopathology department, civil hospital Ahmedabad. Study include small biopsies and resected specimens of small and large intestine of all age groups of patients. Microscopic examination with clinical history took into consideration to arrive at final diagnosis. Result: Study result showing small intestinal lesions outnumber large intestinal lesion in non-neoplastic lesion of intestine. Among non-neoplastic lesion of intestine, non-specific inflammation of small intestine in age group of 21year to 30 year constitute major portion of study and enteric duplication cyst, nematodal infestation, typhoid, omphalocele constitute minor portion of study. Most cases were reported in the 3rddecade of life and Males are predominantly affected. Abdominal pain was chief complaint with which patient was presented to tertiary care center. Conclusion: Histopathology is the gold standard technique in diagnostic algorithm for clinicians as it is a confirmatory method for final categorization and sub categorization of various non-neoplastic lesions***

Keywords: Non-neoplastic Lesion, Histopathology, Intestine

1. Introduction

The small intestine and colon make up the majority of the Gastro intestinal tract and principal site where immune system interfaces with a diverse array of antigen present in food and gut microbes. Intestines are frequently affected by infectious and inflammatory disorders.[1]

Diseases classified as developmental abnormalities, muscular and mechanical disorders, and inflammatory, vascular disorders. Reduction of blood supply to intestine result in changes which vary from superficial mucosal necrosis to full thickness damage with necrosis. [2]

Inflammation of the small bowel is relatively common viz., specific infections-viral or bacterial and non-specific inflammation caused by chronic infection, inflammatory bowel diseases and the drugs. Earlier, only severe acute and chronic pathological conditions were brought to the attention through literature. The advent of ileoscopy helps to demonstrate various forms of enteritis. [3]

Congenital Disorders of intestine like Hirschsprung's disease, Meckel's diverticulum causes significant morbidity in children. Histopathological study of small biopsy and resected specimen is gold standard to find pattern, frequency, site and diagnosis of intestinal lesion for better outcome of patient and for needful treatment. [3]

2. Material and Methods

The present study is observational study carried out in histopathology department, civil hospital Ahmedabad. The study is carried out during the period between May 2022 to September 2022. The study is based on the histopathological evaluation of the received intestinal specimens and biopsies. A total of 152 intestinal specimens and biopsies are analyzed. In this study, the clinic-pathological and histopathological findings of all the intestinal specimens were noted. Due importance paid to clinical history with respect to patient's age and sex, presenting sign and symptoms..The clinical records of the cases are taken from the electronic database of the department.

Inclusion criteria- All the specimens having Non-neoplastic lesions of intestines of all age groups and both gender of patients sent for histopathological examination in department of pathology in B.J. Medical college, Civil hospital Ahmedabad during the study period were included.

Exclusion criteria-Samples with inadequate and poorly preserved specimens. Specimen of Intestinal with neoplastic lesion.

Resected specimens and biopsies are fixed in 10% neural buffered formalin, processed for paraffine embedding and sectioning, stained by routine Haematoxylin and Eosin stains. Special stains like Zeil –Neelson for AFB and PAS were done whenever required.

3. Result

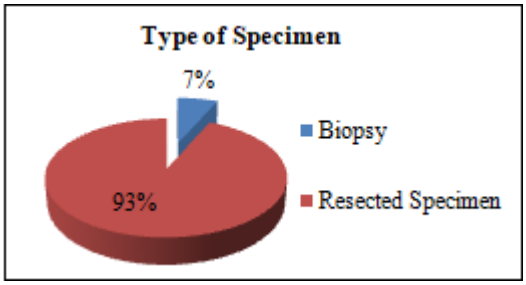
The present study includes142 resected intestinal specimens and 10 intestinal biopsies as shown in table1 and Graph 1.

Table 1

Type of Specimen		
	Number	%
Biopsy	10	6.58
Resected Specimen	142	93.42
Total	152	100

Table 2

S. No	Site of biopsy	Number of biopsy
1	duodenal	1
2	Ileum	2
3	Jejunum	1
4	Colon	4
5	Rectal	2

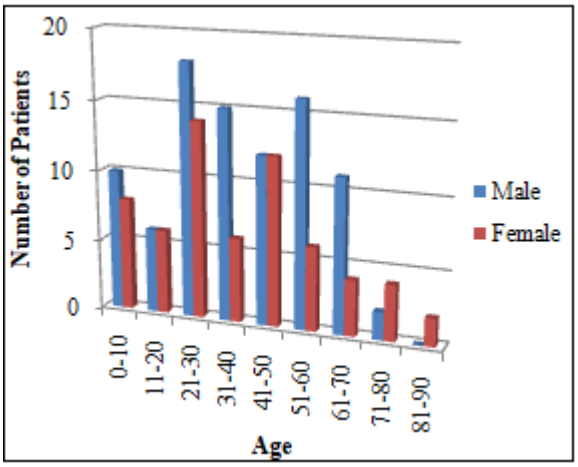


Graph 1

Among intestinal biopsies colonic biopsies are more in number. Out of total 152 specimens, gender distribution shows 59.3% are male and 40.7% are female with M:F ratio 1.45:1.The peak age group among male is 21-30years followed by 51-60 years and among female 21-30years followed by 41-50 years. Lowest number of patients above 80 year of age in female, whereas none in male patient as shown in Total 3.

Table 3

Age Group	Male	Male %	Female	Female %
0-10	10	6.58	8	5.26
11-20	6	3.95	6	3.95
21-30	18	11.84	14	9.21
31-40	15	9.87	6	3.95
41-50	12	7.89	12	7.89
51-60	16	10.53	6	3.95
61-70	11	7.24	4	2.63
71-80	2	1.32	4	2.63
81-90	0	0	2	1.32
Total	90	59.22	62	40.79



Graph 2

Table 4

Major Site	Lesion(Histopathological Type)	N	%	Major Site	Lesion(Histopathological Type)	N	%
Small Intestine	Acute Non-specific inflammation	18	11.84	Large Intestine	Chronic Non-specific inflammation	4	2.63
	Chronic Non-specific inflammation	19	12.50		colonic (Sigmoid) diverticulitis	1	0.66
	Acute on chronic Non-specific inflammation	13	8.55		Tuberculous Inflammation	2	1.32
	Mixed inflammation	5	3.29		Hirschsprung Disease	3	1.97
	Xanthogranulomatous inflammation	2	1.32		Amoebic colitis	1	0.66
	Meckel's diverticulum	6	3.95				
	Ileal diverticulum	3	1.97				
	Tuberculous Inflammation	13	8.55				
	Nematodal infestation	1	0.66				

Major Site	Lesion (Histopathological Type)	N	%	Major Site	Lesion (Histopathological Type)	N	%
Small Intestine	Typhoid	1	0.66	Large Intestine			
	Gangrenous inflammation	16	10.53		Ulcertive colitis	3	1.97
	Jejunal atresia	3	1.97		Total	14	9.21
	Ileal atresia	1	0.66				
	Celiac disease	1	0.66				
	Crohn's disease	2	1.32				
	Enteric duplication cyst	1	0.66				
	Mesentric cyst	3	1.97				
	Acute ischemic injury with perforation	15	9.87				
	Intussusception	2	1.32				
	Omphalocele	1	0.66				
	Chronic Appendicitis	8	5.26				
	Non-specific appendicitis	2	1.32				
	Acute and chronic appendicitis	1	0.66				
	Tuberculous appendicitis	1	0.66				
	Total	138	90.79				

Overall Small intestinal lesions (90.79%) are more common than large intestinal lesion (9.21%) as shown in Table 4. In both small and large intestine, Non-specific Inflammatory lesions(32.52)are more common and least common cases include enteric duplication cyst, celiac disease, typhoid, nematodal infestations, omphalocele (0.66% each). Among biopsies duodenalbiopsy shows Celiac disease, colonic biopsy shows inflammatory bowel disease and rectal biopsy shows granulomatous colitis, rest of biopsies shows non-specific Inflammation.

4. Discussion

In the present study, resected intestinal specimens (93.42%) outnumbered intestinal biopsies(6.5%) which is in contrast with the study by Syeda Sumaiah Fatima et.al. and in concordance with the studies by Uplaonkar S et al [173], M.H Prabhu Mural et al.

Highest no of case between 21-30 year of age(22.05%) in accordance with Nanavati MG.

The study conducted by NANAVATI MG et al found a male predominance with and 63.5% and 36.5%being female, male: female ratio of1.73:1 which is comparable to present study. The study by MH.Pabhu showed male predominance with 56.81% and 43.19% female with male: femaleratio1.3:1.

Table 5

Study	M.H Prabhu et al [174]	Nanavati MG et al[176]	Present Study
Male (%)	56.81%	63.50%	59.30%
Female (%)	43.19%	36.50%	40.7%
Male : Female Ratio	1.3:1	1.73:1	1.45:1

Among non-specific inflammation, Chronic non-specific inflammation is most common followed by gangrenous inflammation, acute ischemic injury with perforation. Non-specific inflammation (35.52%) most commonly involve Ileum followed by jejunum, least common in colon.

Tuberculous inflammation (10.52 %) characterized by caseating epithelioid granulomas and Langhan's type of giant cells. Out of the total 16 cases of TB, 13 cases were from ileum. ZN stain was used to demonstrate the AFB (Acid Fast Bacilli)for final confirmation. The present study is comparable with studies conducted by Syeda Sumaiah Fatima et, Nanavati MG et, Sisodia S M.

Table 6

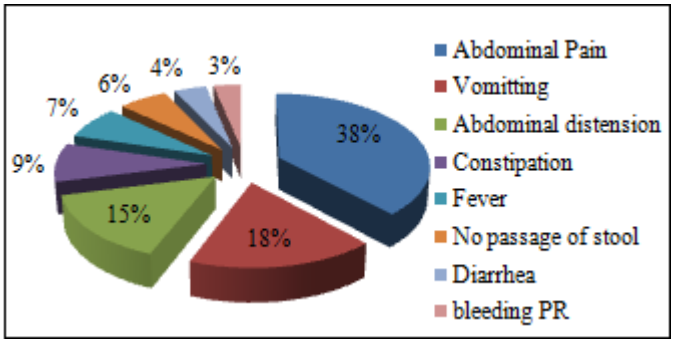
Study	Syeda Sumaiah Fatima et.al.[172]	Nanavati MG et al[176]	Sisodia S M et al[178]	Present study
% of TB cases	7.50%	11.50%	11.60%	10.5%

In the present study 6cases of Meckel's diverticulum (3.94%) were reported during the study period which shows comparable with studies conducted by M.H.Prabhu et al and Sisodia S M.et al. Meckel's diverticulum common in 1st and 2nd decade of life.

Table 7

Study	M.H Prabhu et al[174]	Sisodia S M et al[178]	Nanavati MG et al[176]	Present study
% of cases reported	4%	3.80%	8%	3.94

In the present study, among the 152 cases, abdominal pain was the commonest symptom seen in 38% of the patients, followed by vomiting (18%). The least common symptom was bleeding seen per rectum seen in 3% cases.



Graph 3

Figure 1: Meckels Diverticulum-Blind pouch on antimesentric border

Figure 2: Hirschsprung Disease- Aganglionic segment typically narrow with dilated proximal ganglionic bowel.

Figure 3: Small intestinal Atresia- String like segment of bowel showed by arrow

Figure 4: Gross appearance of Enteric duplication cyst.

Figure 5: Shows multiple opening of Diverticula

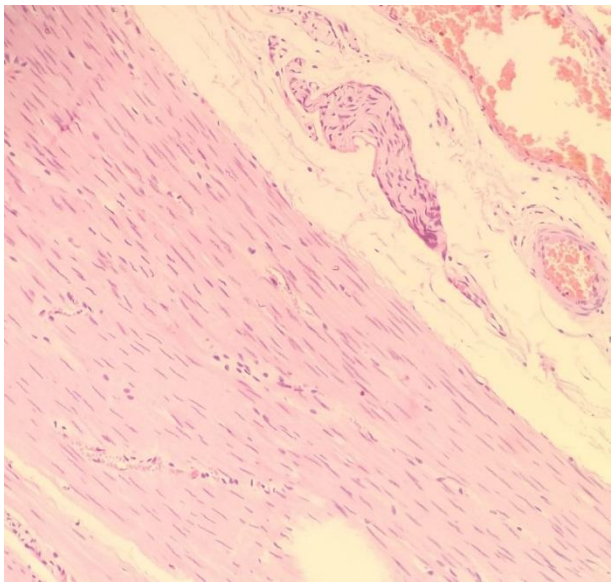


Figure 6: High power view of Hirschsprung disease shows hypertrophied nerve bundles in submucosa

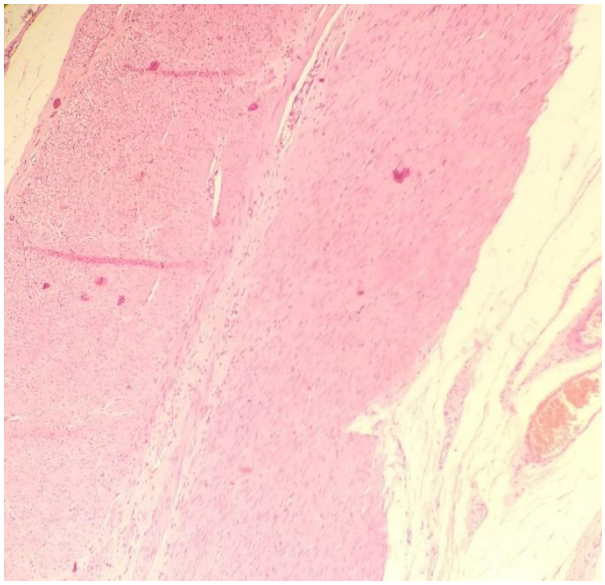


Figure 7: Low power view of Hirschsprung disease shows absence of Ganglion cells in Myenteric plexus.

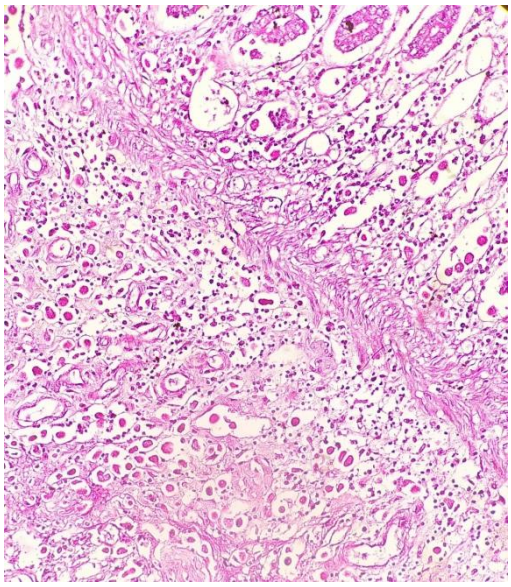


Figure 8 (a): H&E Stain shows round to oval shape trophozoites of Entameba Histolytica present in necrotic debris

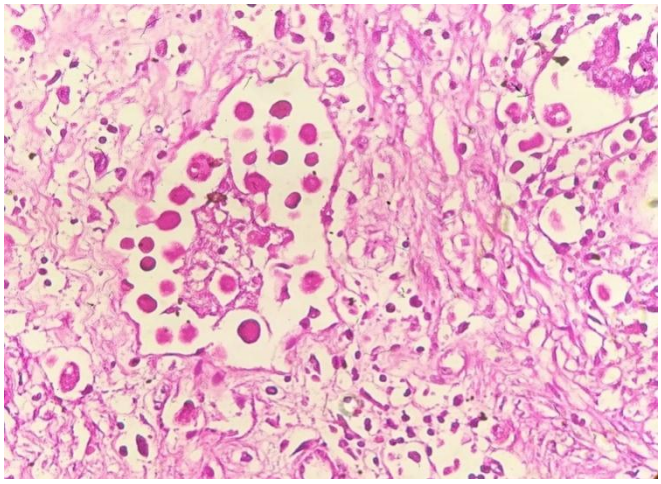


Figure 8 (b): PAS stained sectionshows round to oval shape trophozoites of Entameba Histolytica

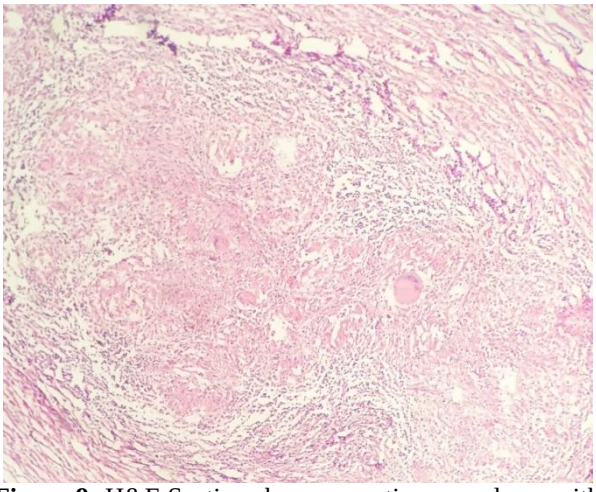


Figure 9: H&E Section shows caseating granuloma with Langhans giant cells surrounded by rim of lymphocytes

5. Conclusion

The present study concluded that lesions of small intestine are very common among all the age group and both genders. Histopathology is the gold standard technique in diagnostic algorithm for clinicians as it is a confirmatory method for final categorization and sub categorization of various non-neoplastic lesions.Early and definite diagnosis of lesion in biopsy bit can help in proper treatment of many lesions.

There are only a few extensive and comprehensive studies of intestinal lesions. The clinical and radiological findings are non-specific in various disorders and thus the histopathological study is mandatory for confirming the diagnosis, early intervention and most importantly to avoid preventable complications.

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