



HISTOMORPHOLOGICAL SPECTRUM OF SMALL INTESTINAL LESIONS

Pathology

Dr. Shweta D. Fugare*

Assistant Professor, Dr. VM GMC, Solapur *Corresponding Author

Dr. Gopal V. Karande

Junior Resident, Dr. VM GMC, Solapur

Dr. Smita S. Shete

Associate Professor, Dr. VM GMC, Solapur

Dr. Sunita S. Dantkale

Professor, Dr. VM GMC, Solapur

ABSTRACT

Small and large intestines is major portion of gastrointestinal tract. So many benign, malignant and congenital disorders arise from there. Benign causes mainly include inflammatory and infectious disorders. This is four-year prospective, retrospective, and observational study which was carried out in the Department of Pathology in the tertiary care centre during the period of May 2020 to April 2024. Total of 68 specimens of small intestine were received in our department. Of these, 60 cases (88.24%) were non-neoplastic and 8 cases (11.76%) were neoplastic. In the present study, non-neoplastic lesions were common as compared to neoplastic lesions. Accurate macroscopic and microscopic examination of specimens which are associated with clinical data helps to reach at definite goal and can improve quality of life of the patient.

KEYWORDS

Small intestine, Non-neoplastic, Neoplastic lesions.

INTRODUCTION:

The small intestine and colon are locations where a wide range of diseases can occur, many of which impact the absorption of nutrients and water. Disruptions of these processes can lead to malabsorption and diarrhea. Moreover, the intestines are the primary site where the immune system interacts with various antigens found in food and gut microbes.¹ The small intestine is sites for broad array of diseases. Conditions such as congenital anomalies, infections, inflammatory diseases, and tumors affect the small intestine.²

Congenital anomalies of the intestine are a more significant cause of morbidity in children than in adults.³ Certain conditions like abdominal tuberculosis pose a diagnostic challenge, as non-specific features of the disease may lead to diagnostic delays and the development of complications.⁴ Tumors are rare, accounting for less than 5% of all gastrointestinal tumors but recently there has been rise in incidence.⁵ Adenocarcinomas and neuroendocrine tumors of the small bowel are the most common subtypes, accounting for approximately 40% of small bowel tumors.^{6,7}

Aims And Objectives:

- To determine the frequency of non-neoplastic and neoplastic lesions of small bowel in tertiary care centre.
- To determine the histomorphology of non-neoplastic & neoplastic lesions of small bowel.

MATERIAL AND METHOD:

This is four-year prospective, retrospective, and observational study which was carried out in the Department of Pathology in the tertiary care centre during the period of May 2020 to April 2024. Total of 68 specimens of small intestine were received in our department in the form of (A) biopsy and (B) resected specimens of small and large intestines including duodenum, jejunum and ileum. This was correlated with gross and histopathological examination of the respective surgical specimen. All gastrointestinal tract malignancies were classified according to the WHO classification of gastrointestinal tumors (2019). Special stains like PAS, Reticulin, AFB, and immunohistochemistry were done whenever necessary. In these study lesions of small intestine was studied as A) Non-neoplastic B) Neoplastic. The data was analysed and frequency, distribution and percentages were tabulated.

OBSERVATIONS AND RESULTS:

Total 68 cases of small intestinal lesions were studied. Of these, 60 cases (88.24%) were non-neoplastic and 8 cases (11.76%) were neoplastic. In the present study, non-neoplastic lesions were common as compared to neoplastic lesions. Similar observations were noted by

Syeda Sumaiya Fatima et al⁸ (2021), Katari SK et al⁹ (2021), and Prabhu Mural MH et al¹⁰ (2020).

Non-neoplastic Lesions Of Small Intestine:

Among the non-neoplastic lesions, the maximum cases were of inflammatory lesions (45%) followed by ischemic enteritis (41.67%), congenital anomalies (13.33%). Similar observations were observed by Das et al¹¹ (2023), and Sulegaon R et al¹² (2010).

Out of 60 cases of non-neoplastic lesions of the small intestine, there was variation in the age incidence which were correlated with studies done by Thakur RY et al¹³ (2016), Goel NM et al¹⁴ (2019), and Prabhu Mural MH et al¹⁰ (2020) and male preponderance was found in non-neoplastic lesions with M:F ratio of 1.06:1 which were correlated with Thakur RY et al¹³ (2016) and Prabhu Mural MH et al¹⁰ (2020).

Table 1: Comparison of distribution of congenital lesions of the small intestine

Lesions	Sulegaon R et al (2010) ¹² n=17	Chaudhari T et al (2018) ¹⁵ n=6	Present study =8
Meckel's diverticulum	64.70%	66.67%	50 (4%)
Intestinal atresia	29.42%	33.33%	37.5 (3%)
Meconium ileus	-	-	12.5 (1%)

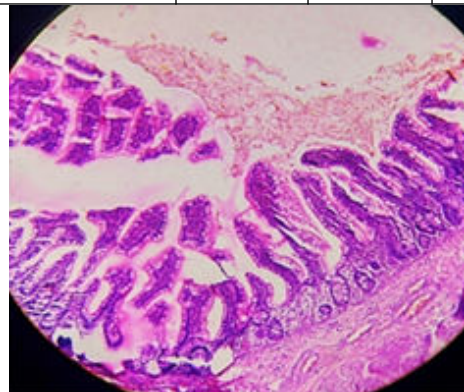


Figure 1: Photomicrograph of meconium ileus showing goblet cells with abundant intracellular mucin and focal extravasation of mucin. (H&E 10x)

Table 2: Comparison of distribution of inflammatory lesions of the small intestine

Lesions	Chennakeshavi et al (2017) ¹⁶ n=62	Katari SK et al (2021) ⁹ n=68	Present study n=27
Non-specific enteritis	59.67%	73.52	59.36 % (16)
Tuberculosis	4.83%	7.35	29.62% (8)
Crohn's disease	8.06%	-	3.71% (1)
Necrotizing enterocolitis	16.12%	4.41	3.71% (1)
Pseudomembranous enteritis	-	-	3.71% (1)

Non-specific enteritis was observed in 16 cases. The common age group affected was the 5th-8th decade with female preponderance. Ileum was involved in 11 cases while jejunum was involved in 5 cases.

Tuberculous enteritis was observed in eight patients between the age group of 21-30 years with female preponderance. Among 8 cases, 5 cases (3 ileum & 2 jejunum) had pulmonary TB with CBNAAT positivity while 3 cases had pain in the abdomen and ulcerative lesion in the ileum and histology proved the diagnosis. ZN stain showed positivity for acid-fast bacilli. Ischemic enteritis was observed in 25 cases in the age group of 10-80 years. Out of 25 cases, 18 cases have mechanical causes such as trauma (6 cases), and atresia (3 cases). In 9 cases septicemia was present and in 7 cases, PT was prolonged.

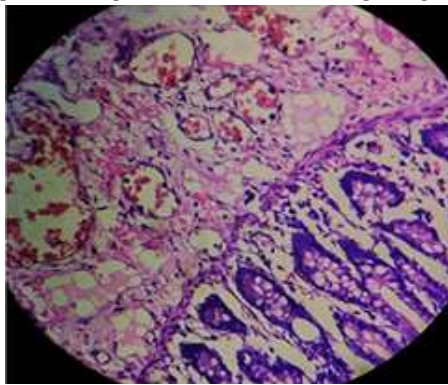


Figure 2: Photomicrograph of necrotizing enterocolitis showing submucosal edema, vascular congestion, dilated and congested vessels, and gas-filled spaces devoid of lining. (H&E 10x)

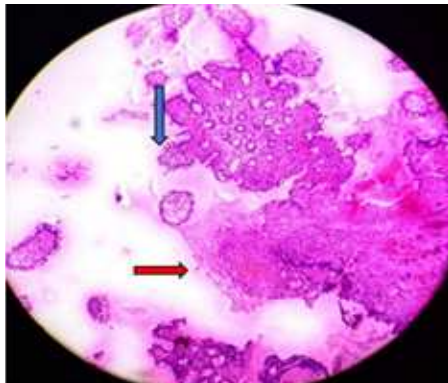


Figure 3: Photomicrograph of Pseudomembranous enteritis showing Pseudo membrane formation (red arrow) and goblet cell hyperplasia (Blue arrow) (H&E 10x)

Neoplastic Lesions Of Small Intestine:

In neoplastic lesions of small intestine most common age group affected was 5th -8th decade which was in correlation with Sulegaon R et al (2010)¹² and Prabhu Mural MH et al (2020)¹⁰. Male preponderance was found in neoplastic lesions with M:F ratio of 1.66:1.

Table 3: Comparison Of Distribution Of Neoplastic Lesions Of The Small Intestine

Lesions	Sulegaon R et al (2010) ¹² n=6	Das S et al (2023) ¹¹ n=11	Present study n=8
GIST (Gastrointestinal stromal tumor)	16.67%	18.18%	50% (4)
Lymphoma	33.33%	9.09%	25% (2)

Adenocarcinoma	33.33%	63.63%	12.5% (1)
Neuroendocrine tumour	16.67%	9.09%	12.5 % (1)

Four cases of GIST were observed in jejunum, in 50, 52,53 and 30 years old with 1:1 M:F ratio. Out of a total of 4 cases of GIST, 3 cases were histopathologically diagnosed as GIST with spindle cell pattern. In all cases, a submucosal tumor was observed (Figure no. 4B). In one case a 55-year-old female patient was diagnosed as an epithelioid gastrointestinal stromal tumor. IHC showed CD 117 positivity. (Figure no 4B inset)

Two cases of lymphoma were noted in ileum and jejunum in 72 and 59 year old male respectively. The tumor was present in a submucosal location. One case of adenocarcinoma was noted in 48 year old female in the terminal ileum.

The patient of the neuroendocrine tumor was a 61-year-old male. On gross examination grey white submucosal tumor was seen in the duodenum. Histopathology showed a tumor composed of cells arranged in acinar, insular, and tubuloglandular patterns. Nuclei have salt and paper chromatin. Mitotic figures are <2/hpf. IHC showed synaptophysin positivity.

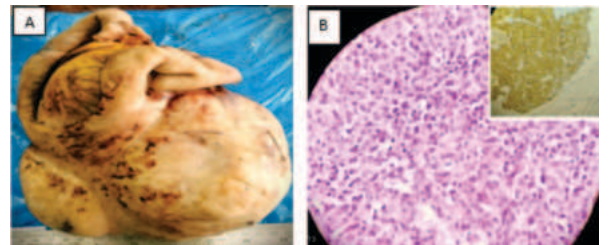


Figure 4: A) Gross specimen of the gastrointestinal stromal tumor showing globular tumor arising from the wall of the small intestine. B) Photomicrograph of submucosal gastrointestinal stromal tumor of small intestine (H&E10x). Inset is showing gastrointestinal stromal tumor of small intestine showing CD117 positivity. (IHC 10x)

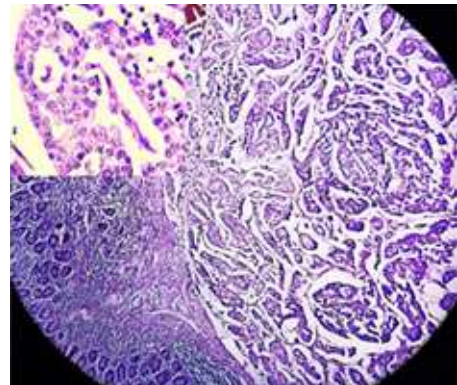


Figure 5: Photomicrograph of small intestine showing submucosal neuroendocrine tumor with acinar and insular pattern (H&E 10x). Inset shows nuclei with salt & paper chromatin (H&E 40x).

CONCLUSION

In small intestine non-neoplastic lesions far outnumbered the neoplastic lesions. As the symptoms are vague and similar in both conditions. Histopathology is gold standard for accurate diagnosis and further management.

REFERENCES

- Kumar V, Abbas AK, Aster JC. Robbins and Cotran Pathological Basis of Diseases. 2014;9(2): 777.
- Noffsinger AE. General Features of the Gastrointestinal Tract and Evaluation of Specimens Derived from It. In: Fenoglio-Preiser's gastrointestinal pathology, 4th edition, Philadelphia, Lippincott Williams & Wilkins; 2017, p.14-49.
- Berrocal T, Lamas M, Gutierrez J, Torres I, et al. Congenital anomalies of the small intestine, colon, and rectum. Radiographics. 1999 Sep Oct;19(5):1219-36.
- Debi U, Ravisankar V, Prasad KK, Sinha SK, et al. Abdominal tuberculosis of the gastrointestinal tract: revisited. World J Gastroenterol. 2014 Oct 28;20(40):14831-40.
- Jemal A, Siegel R, Ward E, Hao Y, et al. Cancer statistics, 2008. CA Cancer J Clin. 2008 Mar-Apr;58(2):71-96.
- Pan SY, Morrison H. Epidemiology of cancer of the small intestine. World J Gastrointest Oncol. 2011 Mar 15;3(3):33-42.
- Anzidei M, Napoli A, Zini C, Kirchin MA, et al. Malignant tumors of the small intestine: a review of histopathology, multidetector CT and MRI aspects. Br J Radiol. 2011 Aug;84(1004):677-90.
- Syeda Sumaiya Fatima et. al. Histopathological Spectrum of Small Intestinal Lesions a Tertiary Care Centre Experience. IOSR Journal of Dental and Medical Sciences, 20(01),

- January 2021, 34-39.
9. Katari SK, K Lakshmi, S Suneetha, T Khadeeja et al. Histopathological Spectrum of Intestinal Lesions at a Tertiary Care Centre in South India. *MedPulse International Journal of Pathology*, December 2021, 19(3), 71-76.
 10. Prabhu Mural MH, Kalyan NV, Pattanashetti MA, Inamdar SS. Clinico pathological spectrum of small intestinal lesions at a Tertiary Care hospital. *Al Ameen J Med Sci* 2020; 13(4):255-260.
 11. Das S, Patel K, Dhahi H, Vahia Y. Histopathological Study of Various Neoplastic and Non-neoplastic Lesions of Small Intestine at Tertiary Care Centre of South Gujarat. *Paripex- Indian Journal of Research*, April 2023, 12(4).
 12. Dr. Ritesh Sulegaon. "Histopathological study of small and large bowel lesions" Dr. VM Govt Medical College, Maharashtra University of Health Sciences, Nashik, Maharashtra, April 2010.
 13. Thakur RY, Nikumb DB, Swami SY. Clinico histopathological overview of Gastrointestinal lesions in a Rural Hospital. *Indian Journal of Pathology and Oncology*, April-June 2016; 3[2]:305-314.
 14. Goel NM, Desai A, Waghmare RM, Dombale V. A study of the histopathological spectrum of gastrointestinal tract lesions in a rural tertiary care center. *MedPulse International Journal of Pathology*, Volume 12, Issue 3, December 2019.
 15. Chaudhari T, Bhalara R, Dhruva G. A histopathological study of the spectrum of gastrointestinal tract lesions: Two-year study. *MedPulse International Journal of Pathology* 2018; 7(2): 50-56.
 16. Chennakeshaviiah GRP, Cheluvegowda DV, Maggad RW, Vimalambika MG. A Histopathological Study of the Small Intestinal Lesions. *National Journal of Laboratory Medicine*. 2017, 6(2): PO14-PO20.