Original Research Article

Histomorphological evaluation of colon lesions

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ABSTRACT

Background: Both macroscopic and microscopic appearance helps in identification of the colon lesion which supports in the treatment of the patient in a better way. The authors were aimed at the prevalence of various colon lesions site wise distribution of various neoplastic and non-neoplastic lesions of the patients and to compare the distribution according to their age, sex and site.

Methods: A retrospective study was designed to study of various intestinal biopsies sent for histopathological examination at Department of Pathology, N.H.L. Municipal Medical College and V.S. Hospital, Ahmedabad, from January 2015 to December 2016 for period of 2 years. The study was based on the histomorphological evaluation of colon lesions received during the study period.

Results: A male preponderance was seen in the incidence of tumors irrespective of tumor type and site of tumor and M:F ratio was 1.64:1. In the large intestine, adenocarcinomas were the commonest malignant tumor. 46 cases (62.61%) were reported. The highest occurrence of appendicitis is in the 2nd and 3rd decade.

Conclusions: The study revealed that various types of lesions in large intestine along with the age group and gender affected more. Male patients were majorly affected. Morphological identification helped to diagnose the type of lesion for early diagnosis. This study focuses the role of histopathological identification in early diagnosis of the disease so that the survival rates in such cases will be increased.

Keywords: Large intestine, Non-neoplastic and neoplastic lesions

INTRODUCTION

Colon and rectum cancer is one of the leading causes of cancer related mortality in developed and also in developing countries. The reports of SEER program conducted by National cancer institute, 8% new cancer cases represent colorectal cancer and is the fourth leading cause among the other cancers in US.[1] The disease is frequently diagnosed in age range 65-74 years and survival rate in US is 66.9%.[1] Developing countries have lower survival rates. In India, survival rate is only 37%.[2] Large intestines (bowel) or colon is one of the sites for non-neoplastic and neoplastic diseases, which may lead to severe complications.[3] The intestines are also the principal site where the immune system interfaces with a diverse array of antigens present in food and gut microbes. Both macroscopic and microscopic appearance helps in identification of the lesion and along with clinical data it supports in the treatment of the patient in accurate way.[3]

In this study, authors were interested to study the prevalence of various colon lesions. The authors were aimed at the site wise distribution of various neoplastic and non-neoplastic lesions of the patients and to compare the distribution according to their age, sex and site.

METHODS

A retrospective study was designed to study of various intestinal biopsies sent for histopathological examination at Department of Pathology, N.H.L. Municipal Medical College and V. S. Hospital, Ahmedabad, from January 2015 to December 2016 for period of 2 years. The study was based on the histomorphological evaluation of colon lesions received during the study period. In this study, the records of all the intestinal specimens including small intestine, large intestine, rectum and anus were included. Due importance was given to brief clinical history with patient's age, inpatient number, presenting sign and symptoms. A total of 400 specimens were analyzed over a period of 2 years. The specimens were received in 10% buffered formalin and processed in auto processors. Paraffin embedded sections were stained with the hematoxylin and eosin method. Gross features of the specimens were documented and multiple sections of the tissue were taken. Routine processing of the tissues was carried out. Sections were analyzed under microscope and final diagnoses were given. The results of the study were documented and presented in number and percentages.

RESULTS

Table 1 shows distribution of patients according to the type of colon lesions. Among the total cases, non-neoplastic lesions 326 (81.5%) were more common than neoplastic lesions 74 cases (18.5%).

Table 1: Distribution of colon lesions according to type.

Intestinal lesions	No. of cases (%)
Non-neoplastic	326 (81.5)
Neoplastic	74 (18.5)
Total	400 (100)

Table 2: Distribution of large bowel lesions according to age and sex of the patient.

Age (in years)	Male	Female	Total (%)
0-10	22	8	30 (7.5)
11-20	28	20	48 (12)
21-30	47	25	72 (18)
31-40	38	27	65 (16.25)
41-50	46	25	71 (17.75)
51-60	40	20	60 (15)
61-70	23	13	36 (9)
71-80	9	4	13 (3.25)
>80	3	2	5 (1.25)
Total	256	144	400

Table 2 presents the distribution of large bowel lesions according to age and sex of the patient. The results showed that the variation in the incidence of large bowel lesions with the peak age of intestinal lesions between 2nd to 5th decade and commonly in male patients. Lowest numbers of patients were in the age group more than 80 in both the sexes. Maximum numbers of female patients were found in age group of 30-41 years.

Table 3 portrays the distribution of intestinal lesions according to type and site of lesion of the patients. The majority of malignant lesions occurred in colon (n=28; 7%) and rectum (n=24; 6%). Lowest lesions were found in patients having cancers in anal canal.

Table 3: Distribution of intestinal lesions according to type and site of lesion.

Site	Non-neoplastic	Neoplastic	Total (%)
Ileum and caecum	24	11	35 (8.75)
Colon	103	28	131 (32.75)
Rectum	41	24	65 (16.25)
Anal canal	49	4	53 (13.25)
Appendix	109	7	116 (29)
Total	326	74	400 (100)

Table 4: Distribution of patients according to their types and histopathology.

| Non-neoplastic lesion type	No. of cases (%)
Non-specific inflammation	63 (19.32)
Gangrene	12 (3.68)
Gangrene with perforation	2 (0.61)
Inflammation with perforation	5 (1.53)
Inflammation with ulceration	34 (10.42)
Tuberculous inflammation	17 (5.21)
Amoebiasis	4 (1.22)
Hirschsprung's disease	2 (0.61)
Juvenile polyp	9 (2.76)
Ulcerative colitis	24 (7.36)
Crohn's disease	2 (0.61)
Atresia	1 (0.30)
Hemorrhoid	42 (12.88)
Appendicular lesion	109 (33.43)
Total	326 (100)
Neoplasm types	
Adenocarcinoma	46 (62.61)
Squamous cell carcinoma	4 (5.40)
Signet ring adenocarcinoma	5 (6.75)
Mucinous adenocarcinoma	9 (12.16)
GIST	1 (1.35)
NHL	1 (1.35)
Basaloid sq. Cell carcinoma	2 (2.70)
Neuroendocrine carcinoma	2 (2.70)
Undiffrentiated carcinoma	4 (5.40)
Total	74 (100)

Table 4 depicts the distribution of patients according to their type of lesions in the large bowel and their

histopathology. The most common benign lesion was appendicitis and accounting for 33.4% of all cases. Lowest was atresia (0.3%) among the patients with non-neoplastic lesion. The table also displays that adenocarcinoma was the most common (62.61%) neoplastic lesions.

Table 5: Distribution of appendicitis cases according to their histopathology.

| Histopathology	No. of cases (%)
Classical acute	44 (40.36)
Acute suppurative	10 (9.17)
Acute ulcerative	26 (23.85)
Acute on chronic	8 (7.33)
Chronic	20 (18.34)
Tuberculosis	1 (0.91)
Total	109 (100)

Table 5 shows the distribution cases of appendicular lesions according to their type of histopathology. Among the total cases, classic acute appendicitis was the most common (40.36%) histological findings in cases of appendicitis followed by acute ulcerative appendicitis (23.9%). There was one case of tubercular appendicitis.
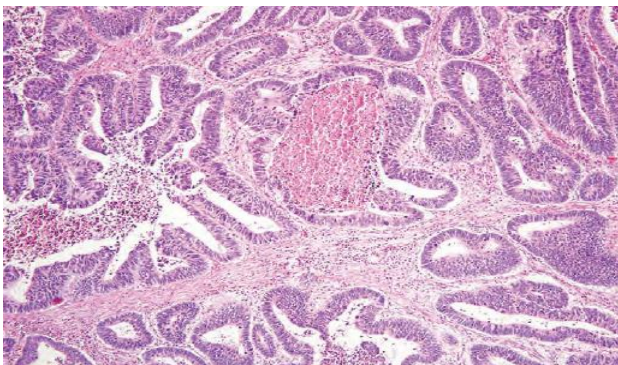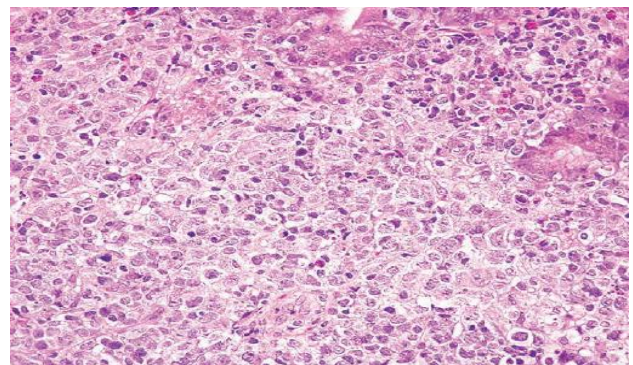

Figure 1: Low grade adenocarcinoma of colon with intraluminal necrosis.
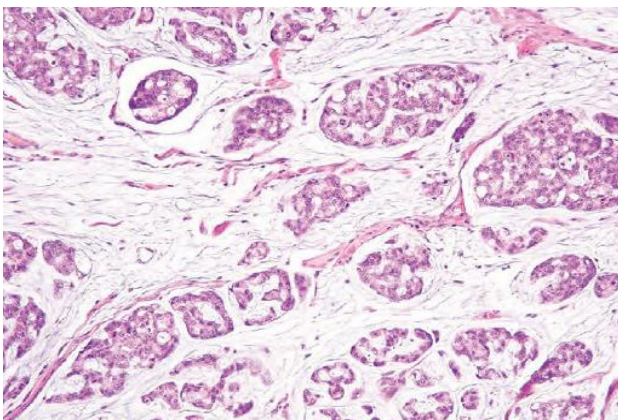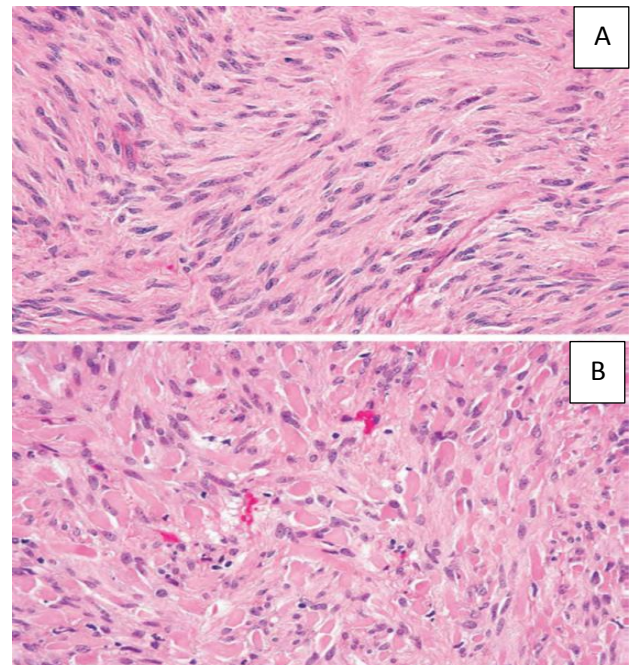

Figure 2: Mucinous adenocarcinoma of colon. Nests of tumor cells are floating in abundant extracellular mucin.
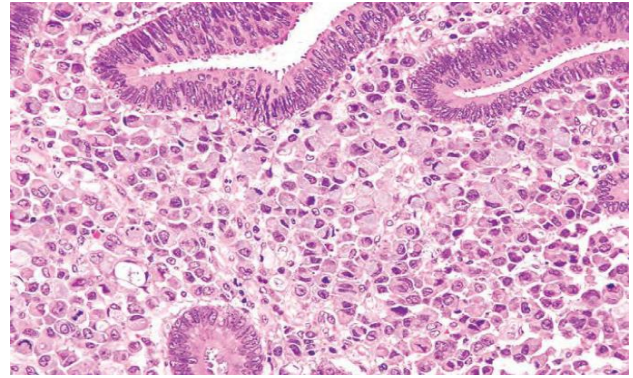
Figure 3: Signet ring cell carcinoma of colon. The nuclei are compressed towards the periphery of tumor cells by intracytoplasmic mucin.

Figure 4: Diffuse large B-cell lymphoma infiltrating the mucosa (H and E, 40x).

Figure 5: Gastointestinal stromal tumors, spindle cell type; (A) the tumor consists of fascicles of bland spindle cells with abundant fibrillary cytoplasm; (B) Skenoid fibres are typical of such tumors at this site.

Table 6: Distribution of malignant neoplastic lesion according to age and sex of patients.

Age (in years)	Male	Female	Total (%)
0-10	0	0	0 (0)
11-20	1	1	2 (2.7)
21-30	3	0	3 (4.05)
31-40	7	4	11 (14.86)
41-50	16	5	21 (28.37)
51-60	9	10	19 (25.67)
61-70	7	7	14 (18.91)
71-80	3	1	4 (5.4)
80-90	0	0	0 (0)
Total	46	28	74 (100)

Distribution of malignant neoplastic lesion according to age and sex of patients is given in Table 6. The results showed that majority of neoplastic lesions occur between the 4th and 5th decade. Male patients were more than females.

DISCUSSION

Distribution of malignant neoplastic lesion according to age and sex of patients is given in Table 6. The results showed that majority of neoplastic lesions occur between the 4th and 5th decade. Male patients were more than females.

Table 7: Comparative study of non-neoplastic and neoplastic large bowel lesions.

Lesion	Nanavati M et al[4]		Present study	
	No. of cases	%	No of cases	%
Non-neoplastic	157	78.5	326	81.5
Neoplastic	43	21.5	74	18.5
Total	200	100	400	100

In the present study, there were 326 cases of non-neoplastic lesions were found comprising 81.5% of total 400 cases and 74 cases of neoplastic lesion were seen comprising 18.5 of total cases. Nanavati et al reported similar results in their study. There were 157 (78.5%) cases of non-neoplastic lesion.[4]

Table 8: Comparison of age wise distribution of Hirschprung's disease.

Age	No. of cases		
	Anupama et al[5]	Jung PM[6]	Present study
0-28 days	16	70	1
1 month-15 years	9	67	1

Age of presentation ranges from 50 - 60% in the neonatal period and 40% in the post-natal period. In the present study cases are equally presented in both period which correlates with that of Jung and Anupama et al who also reported cases in the same range.[5,6]

Table 9: Comparison of age and sex wise distribution of neoplastic lesions.

	Saiprasad et al[7]	Sharma et al[8]	Present study
Male:Female	1:0.9	1.9:1	1.64:1
Age group	>50 years	61-70 years	41-50 years

Age group and sex ratio are two important characteristics in this study. Previous reports revealed the male patients with age group of 60 - 70 years were the majority among the total cases. In the present study, peak age of neoplastic lesions was 41 - 50 years. But Sharma et al and Saiprasad et al reported the age range was more than 50 years.[7,8]

Table 10: Comparison of site of malignant lesions.

Saiprasad et al[7]	Sharma et al[8]	Present study
Rectum (50%)	Rectum (25.8%)	Rectum (32.4%)
Colon (35.8%)	Sigmoid colon (22.5%)	Colon (37.8%)

Table 10 shows the malignant lesions are more common than the benign lesions in colorectal in all studies. Saiprasad and his colleagues reported 50% cases in which lesions were found in rectum followed by colon.[7] In this study, majority cases of lesions in colon. Sharma et al reported major site of lesions as rectum (25.8%).[8] Two cases of anal canal tumor were reported which constitutes about 2.7% of the all tumors. This is in concordance with results reported by Winawer et al who reported that anal canal tumors are rare.[9]

Table 11: Comparison of histopathological types of malignant lesions.

Type	Saiprasad et al[7]	Sharma et al[8]	Present study
Adenocarcinoma	94%	96.6%	62.61%
GIST	1.9%	0.02%%	1.35%
NHL	5.8%	0.01%	1.35%
SCC	3.9%	-	5.40%

Table 11 displays the malignant lesions according to their histopathological types. Most common malignant lesions in all studies were adenocarcinoma. In this study, it was 62.61% whereas the results reported by Saiprasad et al and Sharma et al were higher.[7,8]

In the present analysis, small intestinal tumors were less common in comparison to tumors of large intestine. This result is similar with the study of a population based

study reported by Chow et al who analysed that small intestinal tumors occurs rarely and 40 to 60 times less common than large bowel tumors.[10]

CONCLUSION

The present study was carried out at the Department of Pathology, N.H.L. Municipal Medical College and V.S. Hospital, Ahmedabad during the period between January 2015 to December 2016. A retrospective histopathological study of various large bowel lesions was undertaken at tertiary care center to know the occurrence of different type of lesions and correlate with other studies. 400 cases were included and studied from January 2015 to December 2016. Histopathogically lesions were classified into non-neoplastic and neoplastic lesions.

A male preponderance was seen in the incidence of tumors irrespective of tumor type and site of tumor and M:F ratio was 1.64 :1. In the large intestine, adenocarcinomas were the commonest malignant tumor. 46 cases (62.61%) were reported. 5 cases (6.75%) were Signet ring adenocarcinoma and 9 cases (12.16%) were mucinous adenocarcinoma. 2 cases of anal canal tumor were reported which constitutes about 2.7% of the all tumors. The most common tumor of anal canal was squamous cell carcinoma. Among the appendectomy specimens received appendicitis constituted the most common lesion. The highest occurrence of appendicitis is in the 2nd and 3rd decade.

In conclusion, the study revealed that various types of lesions in large intestine along with the age group and gender affected more. Male patients were majorly affected. Morphological identification helped to diagnose the type of lesion for early diagnosis. The treatment will be more precise when the disease can be identified at its early stage. This study focuses the role of histopathological identification in early diagnosis of the disease so that the survival rates in such cases will be increased.

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