

Original Research Article

Profile of non-neoplastic colorectal lesions - A five year study

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Abstract

Background: Colorectal diseases are frequently encountered in clinical practice. They range from minor problems causing minimal discomfort to potentially serious diseases causing much morbidity and mortality. Clinically most of these disorders present with non-specific symptoms like altered bowel habits, diarrhea, bleeding per rectum either melaena or fresh hemorrhage; thus causing much delay in drawing attention. Early detection and proper management are essential to reduce the morbidity and mortality. Various diagnostic tools are developed in the recent past, improving the detection and assessment of these lesions.

Objectives: To study the profile of various non-neoplastic colorectal lesions and to know the relative frequency of various diseases, and to know the age and sex incidence of the non-neoplastic colorectal lesions.

Materials and methods: This study was carried out in the Department of Pathology, NRI Medical College, Chinakakani, Guntur district. The present study comprised a total of 507 cases of colorectal

lesions which were received in the department of pathology as colonoscopic biopsies and resected specimens. Out of 507 cases, 187 cases were neoplastic and 320 cases belonged to the non-neoplastic group. The present study was done on the non-neoplastic colorectal lesions over a study period of 5 years, i.e. from June 2008 to May 2013.

Results: The present study comprised a total of 507 cases of colorectal lesions over a study period of 5 years, i.e. from June 2008 to May 2013; which included 405 (79.88%) cases of colonoscopic biopsies and 102 (20.12%) cases of resected specimens. Out of the total 507 colorectal lesions, there were 320 (63.12%) cases of non-neoplastic lesions and 187 (36.88%) cases of neoplastic lesions. Out of 320 cases of Non-neoplastic lesions, 211 (65.94%) cases were Males and 109 (34.06%) cases were females; the predominant lesion was chronic non-specific colitis constituting 187 (58.44%) of cases and next to it is the Inflammatory bowel disease which included ulcerative colitis constituting 40 (12.50%) of cases and 10 (3.12%) cases of Crohn's disease.

Conclusion: Colorectal lesions are one of the common causes of morbidity. In routine clinical practice, histology is often considered as the gold standard when compared with other tests. Biopsy provides an excellent opportunity for the clinician and histopathologist to correlate, colonoscopic findings and pathological features.

Key words

Colorectal lesions, Biopsy, Non-neoplastic lesions, Neoplastic lesions, Non-specific colitis, Ulcerative colitis, Crohn's disease.

Introduction

Colorectal diseases are frequently encountered in clinical practice. They range from minor problems causing minimal discomfort to potentially serious diseases causing much morbidity and mortality. Clinically most of these disorders present with non-specific symptoms like altered bowel habits, diarrhea, bleeding per rectum either melaena or fresh hemorrhage; thus causing much delay in drawing attention. Early detection and proper management are essential to reduce the morbidity and mortality. Various diagnostic tools are developed in the recent past, improving the detection and assessment of these lesions. Radiographic evaluation with contrast study is useful for anatomical localization of the diseases. Visualization of the colo-rectal area is of utmost importance in the diagnosis of these diseases. Colonoscopy is playing a major role in the early detection of lesions. Rectal biopsy has always been a highly cost-effective and minimally invasive investigation for local lesions. Colorectal biopsies contribute a significant proportion of the work of most departments of diagnostic histopathology. With the introduction of flexible fibre-optic

colonoscopes, sigmoidoscopes and subsequently developed digital and other technologies, the scope of biopsy diagnosis of large bowel diseases which are hitherto not approachable are now made accessible for non invasive study. In the past few decades, great advances have been made in the understanding the etiopathogenesis of many of the important diseases. The diseases that involve colo-rectal area are of diverse nature. Non- neoplastic lesions can be inflammatory, which can be non-specific or specific like amoebic, tuberculous etc. Infective colitis and proctitis are very common problems and can be due of bacterial or viral etiology. It is important to distinguish them from chronic inflammatory bowel disease. The incidence of inflammatory bowel disease, crohn's disease and ulcerative colitis, their various stages of evolution and their inherent complications which are not part of other inflammatory lesions are increasingly identified now, assisting the doctor to issue proper timely treatment and helping the patient from ever ending symptoms. The large intestine is also a seat for other non -neoplastic lesions like diverticular disease, angiodysplasia, solitary rectal ulcer syndrome, amyloidosis etc.

This study was undertaken to assess the type, incidence, and age, sex prevalence of various diseases of colon and rectum in addition to the study of their gross and microscopic features.

Aim of the study

- To study the profile of various non-neoplastic colorectal lesions and to know the relative frequency of various diseases.
- To know the age and sex incidence of the non-neoplastic colorectal lesions.

Materials and methods

The present study was carried out in the Department of Pathology, NRI Medical College, Chinakakani, Guntur district. The present study comprised a total of 507 cases of colorectal lesions over a study period of 5 years, i.e. from June 2008 to May 2013; which included 405 (79.88%) cases of colonoscopic biopsies and 102 (20.12%) cases of resected specimens. Out of the total 507 colorectal lesions, there were 320 (63.12%) cases of non-neoplastic lesions and 187 (36.88%) cases of neoplastic lesions.

The study included patients who presented with the symptoms like bleeding per rectum,

diarrhoea, altered bowel habits and unexplained anaemia. They were screened and posted for colonoscopy. The colonoscopic biopsies were taken by the gastroenterologist. The biopsies were gently teased from the endoscopy forceps into a bottle containing 10% formalin to allow rapid fixation. After fixation the biopsy specimen was processed and Hematoxylin and Eosin slides were made for microscopic examination. Special stains and IHC were used wherever necessary.

Results

The present study was done on 320 cases of non-neoplastic colorectal lesions out of the total 507 colorectal lesions. Study period was 5 years, i.e. from June 2008 to May 2013.

Out of 320 cases of Non-neoplastic lesions, 211 (65.94%) cases were Males and 109 (34.06%) cases were females. In all the age groups, the lesions were predominantly seen in adult males. In males, maximum numbers of cases were present during 40 to 50 years of life (18.96%) and in females; maximum number of cases were seen in 50 to 60 years accounting to 23.85 % of cases (**Table - 1**).

Table - 1: Age and sex incidence of non-neoplastic lesions (320 cases).

Age	Males	Percentage (%)	Females	Percentage (%)	Total
0-10	13	6.16	10	9.17	23
11-20	12	5.69	8	7.34	20
21-30	38	18.01	20	18.35	58
31-40	32	15.17	15	13.76	47
41-50	40	18.96	14	12.84	54
51-60	31	14.69	26	23.85	57
61-70	36	17.06	12	11.01	48
>70	9	4.27	4	3.67	13
Total	211	100.00	109	100.00	320

Of the 320 cases of non-neoplastic lesions, the predominant lesion was chronic non-specific colitis constituting 187 (58.44%) of cases and next to it is the Inflammatory bowel disease which included ulcerative colitis constituting 40

(12.50%) of cases and 10 (3.12%) cases of Crohn's disease. Other types of colitis were 14 (4.38%) cases, which included 5 cases of ischemic colitis, 4 cases of tuberculous colitis, 3 cases of infective colitis, and 2 cases of

eosinophilic colitis. Amoebic colitis, Indeterminate colitis and Congenital megacolon constituted 4 cases (1.25%) each. And other varieties such as Gangrenous bowel, sigmoid volvulus, Colo-cutaneous fistula and Melanosis coli constituted about 14 cases (4.38%) and 12 (3.75%) cases of solitary rectal ulcer. There were 10 cases (3.12%) of hyperplastic polyps and 21 cases (6.56%) of other polyps which included 11 cases of Juvenile polyps, 9 cases of inflammatory polyps and 1 case of Peutz-Jegher's polyp (Table - 2).

Of the 320 non neoplastic lesions, the most common lesion was non-specific colitis (Figure - 1) with 126 (67%) of total cases in males and 61 (55.96%) of total cases in females with peak age of occurrence between 20 to 70 years and showing male preponderance. Microscopically, they showed chronic mononuclear inflammatory cell collections in the lamina propria with well preserved mucosal glands with other specific features (Table - 3).

Table - 2: Non- neoplastic lesions according to the type of lesion and prevalence.

Non-neoplastic lesions	Number of cases	Percentage (%)
Congenital megacolon	4	1.25
Crohn's disease	10	3.12
Ulcerative colitis	40	12.50
Indeterminate colitis	4	1.25
Amoebic colitis	4	1.25
Non-specific colitis	187	58.44
Other types of colitis a) Ischemic colitis (n= 5) b) Tuberculous colitis (n=4) c) Infective colitis (n=3) d) Eosinophilic colitis (n=2)	14	4.38
Hyperplastic polyp	10	3.12
Other polyps a) Juvenile polyp (n=11) b) Inflammatory polyp (n=9) c) Peutz-Jegher's polyp (n=1)	21	6.56
Solitary rectal ulcer	12	3.75
Others	14	4.38
Total	320	100.00

In the present study, there were 40 (12.5%) cases of Ulcerative colitis (Figure - 2, 3), of which 27 (67.5%) cases were in males and 13 (32.5%) cases were in females with peak in 20 to 50 years of age in both. Histologically, it is characterized by epithelial necrosis, distortion of the glandular pattern, increase in the number of neutrophils, lymphocytes and plasma cells in the lamina propria, cryptitis and crypt abscesses, regenerative hyperplasia of the base of the crypts with evidence of mucous depletion and

dysplasia. In the present study, 2 cases showed dysplasia and were characterised by cells with increased nuclear cytoplasmic (N: C) ratio, pleomorphic, hyperchromatic nuclei with loss of polarity and increased mitotic activity.

In 10 cases of Crohn's disease (Figure - 4), 8 (70%) cases were seen in males and 2 (20%) cases were in females, which were common during 30 to 40 years. Histologically, they were similar to ulcerative colitis with fissure formation

and presence of non-caseating granulomas, a hallmark of Crohn's disease, was found in 4 cases. Among 4 cases of indeterminate colitis, 3 cases were seen in females and 1 case was seen

in male with a peak appearance during 30 to 40 years and is diagnosed by overlapping features of both Ulcerative colitis and Crohn's disease.

Table - 3: Age wise distribution of the various non-neoplastic lesions.

Lesion	Age in years								Total
	0-10	11-20	21-30	31-40	41-50	51-60	61-70	> 70	
Congenital megacolon	2	1	1	0	0	0	0	0	4
Crohn's disease	0	0	2	5	1	1	1	0	10
Ulcerative colitis	0	2	12	4	9	8	3	2	40
Indeterminate colitis	0	0	1	2	0	1	0	0	4
Amoebic colitis	0	0	0	2	0	1	1	0	4
Non-specific colitis	12	12	33	27	33	35	29	6	187
Other types of colitis	0	1	2	1	4	1	4	1	14
Hyperplastic polyps	0	0	1	2	0	2	4	1	10
Other polyps	9	3	2	0	1	4	1	1	21
Solitary rectal ulcer	0	0	2	2	3	2	2	1	12
Others	0	1	2	2	3	2	3	1	14
Total	23	20	58	47	54	57	48	13	320

Figure - 1: Chronic non-specific colitis (H&E - 100X) – non-specific inflammation.

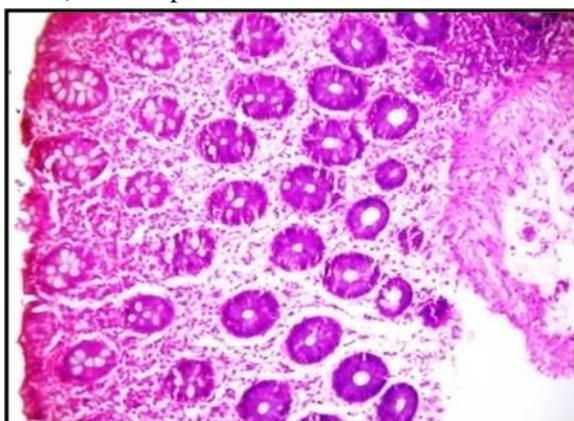


Figure - 3: Chronic phase ulcerative colitis (H&E-100X) - ulceration and crypt distortion.

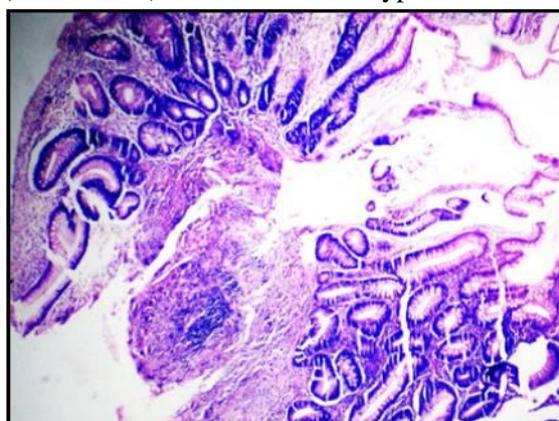
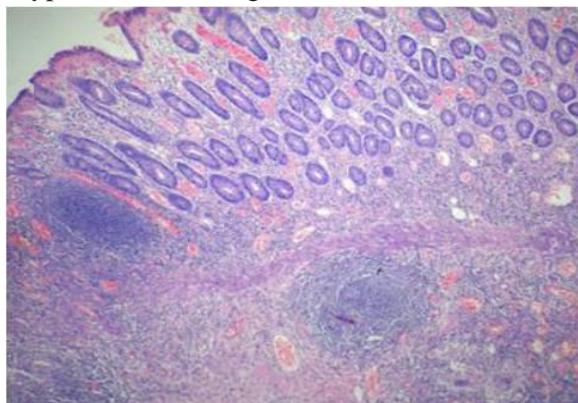


Figure - 2: Gross picture of Ulcerative colitis showing pseudopolyps and evidence of perforation.



Figure - 4: Crohn's disease (H&E - 40X) – Crypt distortion and granulomas.



Out of 10 cases of Hyperplastic polyps, 7 cases (70%) were in males and 3 cases (30%) were in females with its occurrence mostly between 30 to 60 years of age. Microscopically, they showed elongated glands with intra-luminal infoldings giving rise to the saw toothed configuration. Mitotic activity is increased only at the base and Out of 21 cases of other polyps, 16 cases (76.1%) were in males and 5 cases (23.8%) were in females with no particular age predilection.

Almost all the non-neoplastic lesions showed a male preponderance except solitary rectal ulcer and indeterminate colitis. Out of 12 cases of solitary rectal ulcer, 11 (91.6%) cases were in females and 1 (8.3%) case was seen in male with its occurrence during 30 to 60 years of age and is diagnosed by the hyperplasia of the crypts, thickening and splaying of the muscularis mucosa.

Of the 4 cases of amoebic colitis (**Figure - 5**), 3 cases were in males and 1 case was seen in a female, which occurred between 30 to 60 years of age. Microscopically, these cases showed plenty of trophozoites of *Entamoeba histolytica* at the base of the ulcers which were confirmed by special stains like Weigert's Iron haematoxylin (**Figure - 6**) and 4 cases of tuberculous colitis (**Figure - 7**) were diagnosed histologically by the presence of multiple caseating granulomas. Cases of Melanosis Coli were also diagnosed in our study (**Figure - 8**).

Figure - 5: Amoebic colitis (H&E - 100X) - Trophozoites of *Entamoeba* and mixed inflammatory infiltrate.

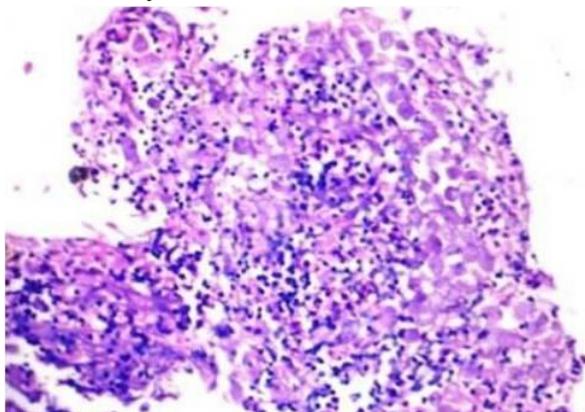


Figure - 6: Amoebic colitis (Weigert's iron haematoxylin - 100X) - Trophozoites of *Entamoeba histolytica*.

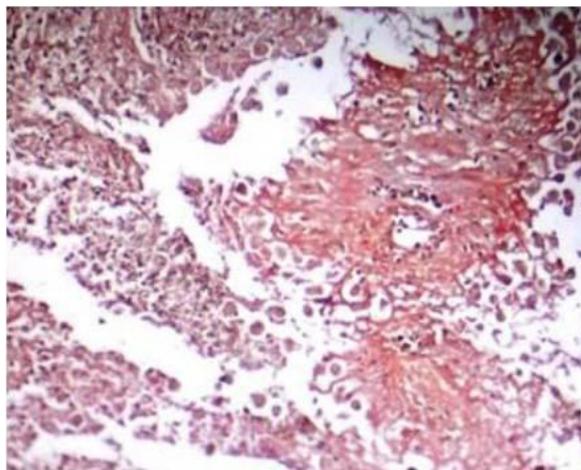


Figure - 7: Tuberculous colitis (H&E - 100X) - Langhan's giant cells and caseous necrosis.

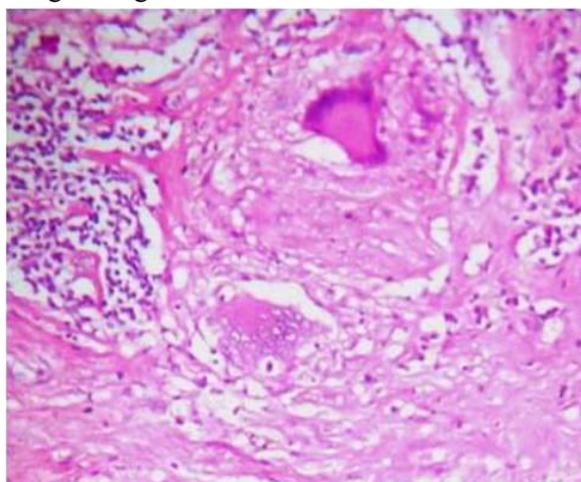
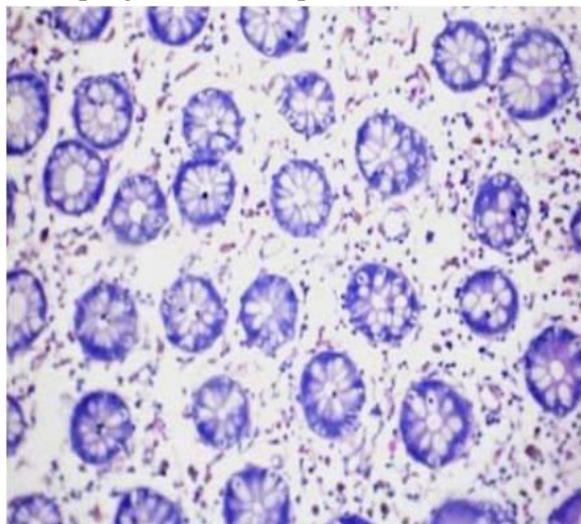


Figure - 8: Melanosis coli (H&E - 100X) - Macrophages filled with pseudo-melanin.



Among 4 cases of congenital megacolon, 3 cases were in males and 1 case in female. 2 cases were diagnosed in first few days to months after birth and other 2 cases presented during their late 20s, which were diagnosed by the presence of nerve hypertrophy and absence of ganglion cells in the muscularis propria.

Discussion

This study was undertaken to know the profile of various colorectal lesions, to know the relative frequency of various diseases and incidence of various colorectal lesions among various age groups and their sex distribution. Diseases of colon and rectum are of common occurrence and have been described since ancient times. The problems are generally of congenital, traumatic, inflammatory, mechanical, vascular or neoplastic etiology [1]. Most of the disorders affect both the rectum and the colon; these are described together with notation when there are peculiarities in distribution. Clinically, these present with change in the calibre of the stool, diarrhoea, constipation or obstipation, hematochezia, melena, rectal tenesmus or urgency. Many systemic diseases and or medications also affect the colonic activity. In the past, Hippocrates described the diarrheal illness. In the year 1710, Little successfully performed a decompressive colostomy for a case

of chronic obstruction due to stenosis of descending colon. In 1932, Crohn and his colleagues described the Crohn's disease. Haenszel in 1968 discovered the correlation between dietary factors and carcinoma. Later studies also revealed hereditary predisposition caused familial polyposis. Moertel et.al in 1958, documented the colorectal cancer commonly found in patients with family history and also increased risk compared to general population was 1.9% [2].

Patients in the present study belonged to all the age groups, the youngest being a five days old neonate and the oldest being the 87 year old male. Non-neoplastic lesions of colon and rectum were more common in between 30 to 60 years of age.

In the present study, males were affected more than females and male: female ratios were 1.9: 1 in non-neoplastic lesions. This is in accordance with the studies done by Saira Bashir, et al. [3] which showed M: F ratio of 1.1:1 in non neoplastic lesions. The sex incidence of lesions was in accordance with Das P, et al. [4], Aljebreen AM, et al. [5], Shen SS, et al. [6], and Abdul Kareem FB, et al. [7] which showed 2.5:1, 1.3 :1, 1.2:1, and 1.3:1 respectively (**Table - 4**).

Table - 4: Comparison of Age and Sex incidence in colorectal lesions.

Study	Total no of cases	Mean age	Sex incidence		Sex ratio
			Males	Females	M:F
Saira Bashir, et al. [3]	1000	42.12 years	524	476	1.1:1
Das P, et al. [4]	32	46.14 years	23	9	2.5:1
Aljebreen AM, et al. [5]	113	55 years	65	48	1.3:1
Shen SS, et al. [6]	434	52 years	241	193	1:2:1
Abdul Kareem FB, et al. [7]	420	50.7 years	237	183	1.3:1
Present study	320	41.15 years	211	109	1.9:1

Various studies on colorectal lesions claimed that most cases are attributed to westernized diet,

tobacco and alcohol consumption. Since, these habits are more common in males, but recently

there is change in the distribution pattern in some countries which indicate that the carcinoma has increased steadily in low-risk population also, particularly among females possibly due to changing life style habits. This leads to the near equal incidence of colorectal cancers in males and females.

In the present study, there are 320 cases of non-neoplastic lesions which included spectrum of lesions like chronic non-specific colitis, ulcerative colitis, Crohn's disease, indeterminate colitis, solitary rectal ulcer, amoebic colitis, congenital megacolon and other varieties which correlated well with the study of Saira Bashir, et al. [3] study of colorectal lesions (**Table - 5**).

Table - 5: Comparison of spectrum of non-neoplastic lesions.

Non-neoplastic lesions	Saira Bashir, et al. [3]		Present study	
	No of cases	Percentage (%)	No of cases	Percentage (%)
Congenital megacolon	7	1.22	4	1.25
Crohn's disease	-	-	10	3.12
Ulcerative colitis	118	20.55	40	12.50
Non-specific colitis	383	66.73	187	58.44
Other types of colitis	7	1.22	22	6.88
Polyps	46	8.01	31	9.69
Solitary rectal ulcer	11	1.92	12	3.75
Others	2	0.35	14	4.37
Total	574	100	320	100

Of the 320 cases of non-neoplastic lesions in the present study, predominant lesions were chronic non-specific colitis constituting 187 cases (58.44%); which correlated well with the study of Saira Bashir, et al. [3] which also showed 383 cases (66.73%) of non-specific colitis as the predominant lesion. Ulcerative colitis constitute 40 cases (12.50%); which also correlated to the study of Saira Bashir, et al.[3] which showed 118 cases (20.55%), 11 cases (14.9%) in Dickinson, et al. and 47 (28.14%) in a study done by Flick et al. There were 10 cases of Crohn's disease constituting 3.12%, whereas the Saira Bashir, et al. [3] study did not report any case.

Out of 320 non neoplastic lesions, there were 31 (9.69%) cases of polyps, which included 10 cases (3.12%) of hyperplastic polyps and 21 cases (6.57%) of other polyps which include 11 cases of Juvenile polyps, 9 cases of inflammatory polyps and 1 case of Peutz-Jegher's polyp. These

results were correlated well with Saira Bashir, et al. [3] study which constituted 46 cases (8.01%) of polyps.

Other types of colitis were 22 (6.88%) cases which included, 4 cases of amoebic colitis, 4 cases of tuberculous colitis, 3 cases of infective colitis, 2 cases of eosinophilic colitis, 4 cases of indeterminate colitis and 5 cases of ischemic colitis; Similarly in the Saira Bashir, et al. [3] study there were 7 cases (1.22%) of other types of colitis, which occurred due to infective etiology, 4 cases of granulomatous colitis, 1 case of Amoebic colitis and 2 cases of colitis due to fungal etiology.

There were 12 (3.75%) cases of solitary rectal ulcer in the present study, which were correlated with the study of Saira Bashir, et al. [3] which constituted 11 (1.92%) cases.

In the present study, there were 4 (1.25%) cases of congenital megacolon which was in accordance to the study of Saira Bashir, et al. [3] which showed 7 (1.22%) cases.

Miscellaneous lesions like gangrenous bowel, sigmoid volvulus, colo-cutaneous fistula and melanosis coli were grouped as others which constitute about 14 (4.38%) cases, similarly in Saira Bashir, et al. [3] study miscellaneous lesions like melanosis coli and

pseudomembranous colitis comprised 2 (0.35%) cases. In the present study of the 507 cases, 320 (63.12%) cases were of non-neoplastic lesions and 187 (36.88%) cases were of neoplastic lesions. These results were correlated well with the study done by Sidney, et al. [8] where the non neoplastic lesions and neoplastic lesions accounted for 61.3% and 39.7% respectively. R.H. Teague, et al. [9] study also showed frequency of non neoplastic lesions of 43.19% of total cases (**Table - 6**).

Table - 6: Comparison of various non-neoplastic and neoplastic lesions.

Study	Number of cases	Non-neoplastic lesions	Neoplastic lesions
Sidney J., et al. [8]	212	130 (61.3%)	82 (38.70 %)
R.H. Teague, et al. [9]	57	25 (43.9%)	32 (56.10 %)
Present study	507	320 (63.12%)	187 (36.88 %)

Conclusion

Colorectal lesions are one of the common causes of morbidity. In routine clinical practice, histology is often considered as the gold standard when compared with other tests. Biopsy provides an excellent opportunity for the clinician and histopathologist to correlate, colonoscopic findings and pathological features. Colonoscopic biopsies are a challenge to the pathologist which requires sufficient expertise in evaluating the tissues. This study is undertaken to evaluate various diseases in the colorectum, distribution of lesions in various parts of the lower gastrointestinal tract and to know the incidence among various age groups and the sex distribution. In this study, predominant lesion was chronic non-specific colitis followed by ulcerative colitis and other lesions.

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