Histomorphological Profile of Colonoscopic Biopsies - A Two Year Study in a Tertiary Care Hospital in South India

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Abstract: Background: The Colonoscopy with accompanying mucosal biopsy is the prime diagnostic tool in the workup of patients with different neoplastic as well as non-neoplastic lesions of colon & rectum. The objectives of this study were to study the spectrum of lesions in colon & rectum on colonoscopic biopsies, to find age & sex distribution of these lesions & to correlate them with presenting complaints & anatomical site. Methods: The study included colonoscopic biopsies of colon & rectum from patients attending the department of surgery at SNMC & Hanagal Shri Kumaresaw Hospital & department of gastroenterology at Kerudi Hospital & Research Centre, Bagalkot from January 2012 to December 2013. There were 108 colonoscopic biopsies during this period, among which 105 biopsies were included in the study. The histological classification of these lesions was based on World Health Organization (WHO). Results: Out of total 108 biopsies, 79 were non-neoplastic lesions, 26 were neoplastic lesions & 3 were inadequate biopsies for accurate interpretation. Most patients presented in the age group of 21-30 years with a male to female ratio of 1.76:1. The most common presenting complaint for both non-neoplastic & neoplastic lesions was diarrhoea. Of all the lesions maximum were non-neoplastic lesions, among which chronic non-specific colitis was commonest. In the neoplastic lesions, classical adenocarcinoma was the commonest subtype encountered. Interpretation & Conclusion: Majority of the lesions of colon and rectum were non-neoplastic & comprised of chronic non-specific colitis, acute on chronic non-specific colitis, ulcerative colitis, tuberculosis, Hirschsprung’s disease, protocollitis & proctitis. All these were more common in males & in the age group of 21-30 years and commonly presented with diarrhoea. The most common neoplasm was classical adenocarcinoma, which was found in patients above 40 years of age. There were two cases each of mucin secreting adenocarcinoma & signet ring cell carcinoma, which were seen in patients below 40 years of age.

Keywords: Colonoscopy; Ulcerative colitis; Chronic non-specific colitis; Tuberculosis; Hirschsprung’s disease; Adenocarcinoma

1. Introduction

India is a vast country with a multi-linguistic population of differing race, genetic setup, culture and dietary habits. Such diversity is also seen in the clinicopathological spectrum of colorectal lesions.[¹]

Disorders of colon account for a large portion of human diseases. Colon is the host to primary neoplasm more than any other organ in the body. Colonic conditions like infections, idiopathic inflammatory diseases, polyps, motility disorders and colorectal tumours are the important lesions which often require colonoscopic biopsy for their conclusive diagnosis.[²]

The colonoscope is used to visualize the mucosa of the rectum, entire colon and terminal ileum to screen the intestinal abnormalities and to get biopsy for the definitive diagnosis.[³]

Colonic tuberculosis is rising in general and particularly in patients with AIDS.[⁴]

In geographical regions where both Crohn’s colitis and tuberculosis are prevalent, the differential diagnosis of the granulomatousileocolitis poses a challenge. Endoscopic mucosal biopsy specimens obtained through fiberopticsigmoidoscopes or colonoscopes from rectum, different areas of colon, ileocaecal valve and terminal ileum provides the possibility of histological conformation of the diagnosis of tuberculosisileocolitis (TEC) or Crohn’s disease in suspected early cases.[⁵]

Colonoscopy has assumed a pivotal role in the diagnosis and management of patients with Inflammatory bowel disease (IBD).[⁶]

Congenital disorder i.e. Hirschsprung’s disease is common in newborns where suction biopsy sampling of mucosa and submucosa is considered the method of choice for diagnosis.[⁷]

Recently with the development of flexible fibre opticsigmoidoscopy and colonoscopy the clinical management of colorectal diseases has much been revolutionized. The procedure of colonoscopy is relatively safe, with low incidence of serious complications like perforation, hemorrhage, cardiopulmonary arrest or sepsis and is becoming important clinically because of more widespread use of screening colonoscopy for colorectal cancer, application of therapeutic colonoscopy (colonoscopic polypectomy) & exciting new technical improvements.[⁸]

2. Materials & Methods

The present study included colonoscopic biopsies of colon and rectum from patients attending the department of surgery, at S. Nijalingappa Medical College
The spectrum of cases of non-neoplastic lesions revealed total 79 cases(table1), where 73 were of inflammatory pathology (92.40%) and 6 were of mechanical disorder (7.59%). Chronic non-specific colitis dominated the picture. Table (III) shows age distribution in non-neoplastic lesions. Maximum cases of inflammatory lesions were found in 21-30 years age group, however no cases were found among 81-100 years age group. All cases of Hirschsprung’s disease were in 0-10 years age group.

Out of 26 neoplastic lesions, 5(19%) were benign in nature and remaining 21(81%) were malignant. A total of 5 colonic polyps were seen in the study period which included juvenile polyp (03) and inflammatory polyp (02).

Amongst the neoplastic lesions (tableIV), adenocarcinoma was the most common histologic type (17.82%). Age and sex distribution of malignant lesions is shown in table (V). Among total 21 cases, 12 (57%) were males and 9 (43%) were females. Out of 17 cases of adenocarcinoma, maximum cases belonged to 61-70 years age group and showed male preponderance. Mucin secreting adenocarcinoma showed equal sex incidence however, signet ring cell carcinoma was found only in females. It was observed that the commonest site affected by classical adenocarcinoma and signet ring cell carcinoma was rectum.

### Table 1: Distribution of lesions

| Lesion                      | No. of cases |
|-----------------------------|--------------|
| Non-neoplastic lesion       | 79(73%)      |
| Neoplastic                  | 26(24%)      |
| Inadequate biopsy           | 03(3%)       |
| Total                       | 108          |

### Table 2: Non-neoplastic lesions

| Sr.no | Diagnosis                  | No. of cases |
|-------|----------------------------|--------------|
| 1     | Acute non-specific colitis | 03(3.79%)    |
| 2     | Chronic non-specific colitis| 43(54.44%)   |
| 3     | Acute on chronic non-specific colitis | 14(17.73%) |
| 4     | Tuberculosis               | 02(2.54%)    |
| 5     | Ulcerative colitis         | 09(11.39%)   |
| 6     | Hirschsprung’s disease     | 06(7.59%)    |
| 7     | Proctocolitis              | 01(1.26%)    |
| 8     | Proctitis                  | 01(1.26%)    |
| Total |                           | 79           |

### Table 3: Age distribution in non-neoplastic lesions

| Age group | Acute non-spl colitis | Chronic non-spl colitis | Acute on chr non-spl colitis | Tuberculosis | Ulcerative colitis | Hirsch disease | Proctocolitis | Proctitis |
|-----------|-----------------------|-------------------------|-------------------------------|--------------|--------------------|----------------|--------------|----------|
| 0-10      | -                     | -                       | -                             | -            | -                  | -              | -            | -        |
| 11-20     | -                     | -                       | -                             | -            | -                  | -              | -            | -        |
| 21-30     | 6(13.95%)              | 13(30.23%)              | 3(21.42%)                     | 1(50%)       | -                  | -              | -            | -        |
| 31-40     | 2(66.66%)              | 10(23.25%)              | 2(14.28%)                     | -            | -                  | -              | -            | -        |
| 41-50     | 5(11.62%)              | 2(14.28%)               | -                             | -            | 3(33.33%)          | 1(100%)        | -            | -        |
| 51-60     | 5(11.62%)              | 1(7.14%)                | -                             | -            | -                  | -              | -            | -        |
| 61-70     | 2(4.65%)               | 1(7.14%)                | -                             | -            | -                  | -              | -            | -        |
| 71-80     | -                     | -                       | -                             | -            | -                  | -              | -            | -        |
| 81-90     | -                     | -                       | -                             | -            | -                  | -              | -            | -        |
| 91-100    | -                     | -                       | -                             | -            | -                  | -              | -            | -        |
| Total     | 03                    | 43                      | 14                            | 02           | 09                 | 06             | 01           | 01       |
Table 4: Malignant neoplastic lesions

| Sr.no | Lesion                        | No.of cases |
|-------|-------------------------------|-------------|
| 1.    | Adenocarcinoma                | 17 (82%)    |
| 2.    | Mucinsecreting adenocarcinoma | 02 (9%)     |
| 3.    | Signet ring cell carcinoma    | 02 (9%)     |
|       | Total                         | 21          |

Table 5: Age & Sex distribution of malignant lesions

| Age group | Adenoca M | Adenoca F | Mucin sec ca M | Mucin sec ca F | Signet ring cell ca M | Signet ring cell ca F |
|-----------|-----------|-----------|----------------|----------------|-----------------------|-----------------------|
|           |           |           |                |                |                       |                       |
| 0-10      | -         | -         | -              | -              | -                     | -                     |
| 11-20     | -         | -         | -              | -              | -                     | -                     |
| 21-30     | -         | -         | 01             | 01             | 00                    | 01                    |
| 31-40     | 01        | 02        | -              | -              | -                     | -                     |
| 41-50     | 03        | 01        | -              | 00             | 01                    |                       |
| 51-60     | 03        | 01        | -              | -              | -                     | -                     |
| 61-70     | 04        | 01        | -              | -              | -                     | -                     |
| 71-80     | 00        | 01        | -              | -              | -                     | -                     |
| 81-90     | -         | -         | -              | -              | -                     | -                     |
| 91-100    | -         | -         | -              | -              | -                     | -                     |
| Total     | 17        | 02        | 02             | 02             | 02                    | 02                    |

**Figure 1:** a) Colonoscope - Ulceroproliferative growth rectum  
b) Adenocarcinoma - rectum H&E 100X

**Figure 2:** Papillary adenocarcinoma - Sigmoid colon H&E 40X
Figure 3: a) Crypt abscess with chronic inflammatory infiltrate in lamina propria. H&E 100X
b) Crypt lining showing neutrophilic infiltration. H&E 400X

Figure 4: Rectal polyp

Figure 5: Juvenile rectal polyp - showing columnar epithelial lining. H&E 40X

Figure 6: Tuberculosis - colon H&E 100X
4. Discussion

Endoscopy is a crucial tool in the diagnosis and management of various lesions of colon and rectum. Recent widespread use of flexible endoscope has produced a dramatic expansion of our knowledge of the pathogenesis and evolution of disease processes affecting the gastrointestinal tract. Symptomatology of colorectal lesions is very non-specific and hence is the central role played by colonoscopy in the early detection of colonic lesions.

Chronic non-specific colitis comprised the maximum number of cases in our study however, definitive etiologic factor could not be identified in most of the cases, which correlates with the findings drawn by Deshpande V et al. [9] Visual inspection of the colon and in certain cases, the terminal ileum, is a crucial component of the workup of a patient with suspected IBD. The colonoscopic examination with accompanying biopsy specimens can often establish the diagnosis, determine the extent and severity of IBD, and establish the presence of dysplasia during surveillance to reduce the risk of colorectal cancer.[6]

The incidence and prevalence of Ulcerative colitis in the Indian subcontinent is on the rise and the disease is characterised by remissions and relapses.[10] But its accurate diagnosis still remains uncommon despite of greater awareness of the disease and better diagnostic facilities that distinguish ulcerative colitis from other types of colitis. It is a challenging clinical entity which requires early diagnosis, thereby to avoid severity of disease.[11]

Similar to previous studies by D Badmapriya et al and Sood et al present study also observed male preponderance in cases of ulcerative colitis. Disease prevalence was high in patients between 21 to 30 years and 41 to 50 years with diarrhoea as commonest presenting complaint. These findings contrasted observations of D Badamapiya et al and Sood et al where bleeding per rectum was commonest symptom.[11,12] Most of our cases had pancolitis similar to findings of Sivaram G et al.[13]

All the six cases of mechanical disorder were of Hirschsprung’s disease. Maximum number of these cases were in the neo-natal period which is in concordance with previous studies. However, female preponderance was observed in present study which contrasted findings of Anupama et al and Jung et al who observed male preponderance.[14,15]

India carries almost one quarter of the world’s total tuberculosis burden. It is a biggest health crisis confronting India. Present study encountered 2 cases of intestinal tuberculosis with equal sex incidence and mean age of presentation of 63 years, which mirrors the findings of Leung VKS et al.[16]

Screening for colorectal cancer by colonoscopy with removal of precancerous lesions is a powerful and effective approach for reducing colorectal cancer incidence and mortality, therefore it is now considered as gold standard for the diagnosis of colorectal cancer.[17] Amongst 21 colonoscopic biopsies diagnosed as malignant lesions, 17 were of adenocarcinoma, 2 of mucin secreting carcinoma and remaining 2 of signet ring cell carcinoma. These lesions showed male preponderance and majority of the patients were above 40 years similar to the observations of Phillipo et al.[18] In the present study, the patients less than 40 years of age tended to have poor prognostic tumors such as mucinous and signet ring cell carcinoma, this finding concurs with previous studies.[19]

Bleeding is an index symptom in early stage colorectal cancer, therefore it merits an urgent and full investigation, as it is a diagnostic challenge to distinguish a benign condition from a serious underlying colorectal disease on the basis of bleeding alone. Rectal bleeding was the commonest presenting symptom for malignant lesions in the present study which is in agreement with studies of Yawe KT et al[20] and Saidi HS et al.[21]

Majority of the neoplastic lesions were left sided, especially involving rectum followed by recto-sigmoid and sigmoid colon, similar to the findings made by Gurjeet et al.[22]

There is no doubt that fibreoptic colonoscopy increases diagnostic accuracy in large bowel diseases & is especially helpful in cases where radiology is either negative or equivocal. [23]Colonoscopy and colonoscopic biopsy examinations are now performed not only for the diagnosis of diseases but also for monitoring the course of wide variety of conditions and for the early detection of complications of colonic lesions. As a consequence, the
reasons for obtaining mucosal biopsy material have increased, and no longer are they performed to simply identify neoplasms. Thus colonoscopy with biopsy plays a significant role in reducing morbidity & mortality in patients with colorectal lesions.

5. Conclusion

The histomorphological profile of colorectal biopsies have a wide spectrum, ranging from infectious conditions, inflammatory disorders, precancerous lesions to colorectal malignancies. Inflammatory pathologies are found to affect the colorectal region most frequently. Therefore colorectal lesions need an accurate diagnostic approach, wherein interpretation of colorectal mucosal biopsies by histopathologists has now taken a cornerstone place in the workup and management of patients with colorectal lesions.

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