Histopathological Study of Colorectal Lesions and Its Correlation with Colonoscopic Findings

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ABSTRACT

Introduction: Colorectal lesions are diverse and have variety of symptoms which overlap with benign and malignant conditions. Cancerous conditions are common in this region, thus early diagnosis influences the response to management. Colonoscopy and histopathological study of lesions is crucial in diagnosis and management of neoplastic conditions. **Aims:** To study the correlation of the colonoscopic and histopathological findings in colorectal lesions and spectrum of colorectal lesions. **Methods: T**his is a hospital based prospective cross-sectional study conducted over the period of 16 months from January 2021 to June 2022 in department of Pathology, Nepalgunj Medical College Teaching Hospital (NGMCTH), Kohalpur, Nepal. Informed verbal consent from the patient was obtained. Patients who have undergone colonoscopy were included in the study whose corresponding histopathological samples were also received in the form of either large or small biopsies. **Results:** Total 95 cases were included in the study which showed male preponderance overall as well as in malignant conditions. Adenocarcinoma was most common histopathological finding followed by nonspecific chronic colitis. Most common clinical complain was bleeding per rectum and most common colonoscopic finding was ulceroproliferative lesion. The correlation between colonoscopy and histopathology done as benign and malignant was statically significant. **Conclusion:** The current study revealed a good correlation between colonoscopic and histopathological findings. Morphological study helps in identification of disease for early diagnosis and management, especially in malignancy.

Keywords: Adenocarcinoma, Colitis, Colon, Colonoscopy, Histopathological study

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INTRODUCTION

Colorectal lesions are diverse which includes inflammatory lesions, idiopathic conditions, infections and neoplasms. Nonspecific colitis, Inflammatory bowel disease (IBD), polyp and tuberculosis (TB) are among common colon pathology.[1] Colorectal cancer (CRC) is the third most common cancer and second most common cause of cancer related death worldwide. The incidence of CRC is higher in developed countries and it is increasing in developing countries. It is one of the leading cause of cancer related mortality in developing countries.[2] Geographic difference are possibly due to dietary and other environmental exposures. Higher risk of CRC is related to consumption of diet poor in fiber and rich in meat.[3] In 2020 CRC accounts for 10% of global cancer incidence and 9.4% of cancer death.[4] According to GLOBOCON 2020, incidence rate of CRC in South Asia was 2.33% and total death was 1.18%.[5] Incidence rate of CRC in Nepal was 4.5 cases per 100,000 people in 2020.[2]

Colorectal lesions can be benign or malignant and patients may present with variety of symptoms. These symptoms can be related to specific conditions like, bleeding PR and abdominal pain to CRC or polyps, bloody diarrhea to IBD and diarrhea to colitis. The standard diagnostic tool for colorectal complain is colonoscopy. In addition to its diagnostic role, it also has role in surveillance and management.[6] Colonoscopy is a safe and allows direct visual inspection of mucosa and lesions.[1] Histological study is essential for confirming the diagnosis. Thus, this study is done to know the correlation of the colonoscopic and histopathological findings in colorectal lesions and spectrum of colorectal lesions.

METHODS

This is a hospital based prospective cross-sectional study conducted over the period of 16 months from January 2021 to June 2022 in department of Pathology, NGMCTH, Kohalpur, Nepal. Informed verbal consent from the patient and ethical approval from institutional review committee were obtained. Patients who have undergone colonoscopy were included in the study whose corresponding histopathological samples were also received in the form of either large or small biopsies.

Statistical Analysis

Inclusion Criteria:

Patients presented with gastrointestinal symptoms who underwent colonoscopy. Biopsies or specimen from colon and rectum is included.

Exclusion Criteria:

i. Insufficient or inadequate biopsies. ii. Poorly fixed or unfixed specimens. iii. Anal lesions were excluded.

Clinical details of patients along with colonoscopic findings were obtained. Histopathological samples obtained were fixed in 10% neutral buffered formalin. Gross features of specimen were noted and sections were taken. Routine tissue processing was done with final embedding in paraffin blocks and stained with Hematoxylin and Eosin (H&E) stain.8 Special stains like Periodic Acid Schiff (PAS) and Ziehl Neelsen (ZN) stain were done whenever necessary. Biopsy results were evaluated. Colonoscopy findings available were correlated with final histopathological diagnosis. Correlation was done by categorizing the lesion as benign/non-neoplastic and malignant.

Data were analyzed using Microsoft excel and standard statistical software SPSS 20.0.

RESULTS

A total of 95 cases were included in the study. The study included 69 male and 26 female patients with male to female ratio of 2.6:1. Mean age of the patient was 46.09 years with most common age range being 31-40 years. In most of the cases specific site of the colon was not mentioned. Most common clinical symptom was bleeding PR which was seen in 43 cases (45.3%) followed by pain abdomen in 32(33.7%) cases. Histopathological diagnosis of various lesions is shown in Table I. Most common histopathological diagnosis was adenocarcinoma (34.7%) followed by non-specific chronic colitis (33.7%). Juvenile polyp was commonly diagnosed lesion in first 10 years of life which accounted for total four cases (4.2%). Dysplasia was graded as low and high grade. High grade dysplasia was seen in four cases. Ulcerative colitis was seen in seven cases which showed distortion of crypt architecture with cryptitis, crypt abscess, lymphocytes and basal plasmacytosis. Tubercular infection was seen in one case which showed granulomas, necrosis and positive AFB stain histologically. Among 95 cases 44(46.3%) was malignant and 51(53.7%) was benign/non-neoplastic. Most common malignancy was adenocarcinoma as seen in 33 cases, which showed variable microscopic features like infiltrating glands, hyperchromatic nuclei, nuclear stratification and atypical mitosis. They were graded as poorly differentiated, moderately differentiated and well differentiated. Other features like presence of mucin, signet ring cells and papillary architecture were also seen. Common age group involved by malignancy was noted between 71-80 years of age and seen commonly in males then in females. Among total 95 cases studied most common colonoscopic finding was presence of ulceroproliferative growth accounting for 23 cases (24.2%) followed by presence of erosion in 20 cases (21.1%) and mass in 17 cases (17.9%) as shown in table II.

The correlation of colonoscopic diagnosis with histopathological diagnosis is shown in table III and the result was statically significant with P value of <0.001. Out of 54 suspected malignant cases on colonoscopy, 44 were malignant on histopathology and 10 were benign. Benign/non-neoplastic cases on colonoscopy was all benign/non-neoplastic on histopathological study.

Histopathology	Frequency	Percentage (%)
Adenocarcionma	33	34.7%
Nonspecific chronic colitis	32	33.7%
Ulcerative colitis	7	17.4%
High grade dysplasia	4	4.2%
Juvenile polyp	4	4.2%
Chronic lymphocytic colitis	2	2.1%
Mixed adeno-neuroendocrine CA	2	2.1%
Neuroendocrine tumor	2	2.1%
Acute on chronic colitis	1	1.1%
Adenosquamous carcinoma	1	1.1%
Chronic active colitis	1	1.1%
Collagenous colitis	1	1.1%
GIST	1	1.1%
Hyperplastic stromal nodule	1	1.1%
Tuberculosis	1	1.1%
Tubulovillous Adenoma	1	1.1%
Poorly differentiated carcinoma	1	1.1%
	95	100%

Table I: Histopathological diagnosis (N=95)

Colonoscopy	Frequency	Percent
Ulceroproliferative growth	23	24.20%
Erosion	20	21.10%
Mass	17	17.90%
Inflammation	15	15.78%
Ulcer (non-specific)	10	10.52%
Ulcer (ulcerative colitis)	8	8.40%
Polypoidal growth	2	2.10%
	95	100

Table II: Clonoscopic findings (N=95)

		Histological categorization		Total	P value
		Benign	Malignant		
Colonoscopy	Benign	41	0	41	<0.001
	Malignant	10	44	54	
Total		51	44	95	

Table III: Colonoscopic and Histological categorization Crosstabulation

DISCUSSION

The spectrum of colonic lesions varies from benign lesions like infections, inflammation to polyps and tumors. All these lesions require colonoscopy as well as histopathological study for the conclusive diagnosis. Widespread use of flexible colonoscopy has improved diagnostic workup as visual inspection along with biopsy plays important role.[3] In present study, 95 biopsies with colonoscopic findings were received in period of 16 months from January 2021 to June 2022. Most common age group involved was 31-40 years which was similar to the study done by Karve SH et al[3] and Shah N et al.[9] Higher cases of colorectal lesions among adults can be attributed to dietary, environmental and genetic susceptibility.[10,11,12] The peak age for neoplastic lesion was 71-80 years which was also seen in study done by Geetha C et al[1] and Vaidhya P et al.[13] However, in some studies malignancy was common in younger age group of 31-50 years[3] and 40-60 years.[14] Increase incidence in younger age group can be due to lifestyle and dietary habits, as these factors in association with genetic characteristics might be the contributing factor.[3] This study showed male predominance in both benign and malignant conditions concurrent to other studies[1,3,13] which can be attributed to proposed aetiopathogenesis for colorectal lesions such as westernized diet, tobacco and alcohol consumption which are more common in males.[1]

In the present study, bleeding PR was the commonest presenting symptom overall as well as in malignancy, seen in 43 cases, which is similar to other studies.[1,3,7] In studies done by Karve SH et al[3] and Moussa FR et al[7] constipation and pain abdomen were common presenting feature respectively. In this study, histopathologically neoplastic conditions accounted more than benign lesions, which is 51 cases and 44 cases respectively, similar to study done by Geetha C et al[1] and Karve SH et al.[3] Most common histopathological diagnosis was adenocarcinoma as seen in studies done by various studied.[3,7,9,14] Non-specific chronic colitis was most common benign/non-neoplastic condition as seen in other studies.[1,3,7,14] Juvenile polyp was common in children of age group 0-10 years which is similar to studies done by Karve SH et al[3], Vaidhya P et al[13] and Lee Bet al.[15]

In this study, ulceroproliferative growth was most common colonoscopic finding overall as well as in malignant conditions, similar to the various studies[3,8,13] while erosion was seen in benign/ non-neoplastic conditions.[7]

CONCLUSION

The present study showed adenocarcinoma being the commonest malignancy and non-specific chronic colitis as most common benign lesion. In conclusion, the study showed that colon is involved by various types of lesions with wide range of non-specific symptoms overlapping with both benign and malignant conditions, thus, visualization of lesion with examination of gross mucosal change by colonoscopy and histopathological study for further confirmation of nature of disease by study of morphological pattern helps in early identification of lesions with malignant potential which helps in precise management. The correlation between colonoscopy and histopathology done as benign and malignant was statically significant.

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