



CLINICOHISTOLOGICAL CORRELATION OF COLONOSCOPY GUIDED BIOPSIES IN A TERTIARY CARE HOSPITAL

Pathology

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ABSTRACT

INTRODUCTION: With the development of flexible endoscopes, there is a great increase in the examination and mucosal biopsy evaluation of all portions of the large intestine and rectum. In the suspected colonic diseases, colonoscopy examination is important in the diagnosis and treatment making it as a diagnostic procedure of choice for patients with diarrhea lasting for several weeks to months or for any bloody diarrhea. To put the interpretation of the biopsy findings into more rational and comprehensible content, we aim to provide herein an understanding of normal and abnormal histology and describe commonly encountered abnormal histological patterns and their clinical correlation.

MATERIAL AND METHODS: The study was cross-sectional in nature and was conducted in a tertiary care setting. The study included 100 cases presenting with lower gastrointestinal symptoms, which had undergone colonoscopy biopsy. **RESULT:** The age distribution of patients who underwent the colonoscopy biopsy ranged from 18 years and above with mean age being 48.46 years, proving that it is a safe and tolerable procedure. A comprehensive histopathological study of colonoscopy biopsy specimens was done in constant correlation with clinical and colonoscopy features. In the present study, histopathological diagnosis correlated well with the colonoscopy diagnosis offered. Colonoscopy, as we know, also plays a key role in diagnosis, follow up and treatment, especially in cases of Inflammatory bowel disease and malignancies. In the present study we found 37 cases of Ulcerative colitis with few clinical diagnosis of Malignancy, hence giving a warning of a chance of development of malignancy. Colonoscopy also permits therapeutic removal of polyps. Biopsy helps in the diagnosis of various familial polyposis and adenomatous polyps, which have a malignant potential. Colonoscopy is currently considered to be gold standard for cancer surveillance and can detect advanced colonic neoplasms in asymptomatic individuals.

KEYWORDS

Colonoscopy, Inflammatory Bowel Disease, Ulcerative Colitis.

INTRODUCTION

Lower GI endoscopy is a procedure in which the gastroenterologist uses an endoscope consisting of a long, flexible tube with a camera to see the lining of the lower gastrointestinal (GI) tract. By this procedure either only rectum and sigmoid colon (recto sigmoidoscopy) or the entire colon (colonoscopy) can be examined [1] [2]. In the suspected colonic diseases, colonoscopy examination is important in the diagnosis and treatment making it as a diagnostic procedure of choice for patients with diarrhea lasting for several weeks to months or for any bloody diarrhea [3]. To put the interpretation of the biopsy findings into more rational and comprehensible content, we aim to provide herein an understanding of normal and abnormal histology and describe commonly encountered abnormal histological patterns and their clinical correlation.

MATERIALS AND METHODS:

The study was conducted in a tertiary care hospital after approval from institutional ethical committee in 100 patients. Colonoscopy findings and apparent pathology were noted during the colonoscopy procedure and biopsies taken from the respective representative areas, and clinical diagnosis was noted as per the gastroenterologist. Adequate number of biopsy tissue was taken depending on site and lesion and as decided by the gastroenterologist. Routine haematoxylin and eosin was done for each case. Special stains like ZN Stain for AFB and PAS stain for mucin was done, when required to make the histological diagnosis. Descriptive and inferential statistical analysis has been carried out in the present study. Data were statistically described in terms of frequencies and percentages and presented in the form of graphs, tables and charts when appropriate using Microsoft Excel and SPSS V 20.0 software. Correlation was evaluated by Fisher's exact test wherever possible.

OBSERVATIONS:

In our study, colonoscopy with biopsy was performed on patients with age group ≥ 20 years, ranging from 18 years and upward. There was a clustering of cases between 21 to 70 years with maximum cases seen in 21-30 & 61-70 years of age groups each having 18 cases. The least number of cases was seen in the age group ≤ 20 . The male to female

ratio was 1.27: 1. Most common symptom was diarrhea (80%) followed by pain abdomen (60%).

Clinical symptoms	No. of cases	Percentage
Pain abdomen	60	60%
Vomiting	20	20%
Constipation	26	26%
Diarrhea	80	80%
Anorexia	53	53%
Melena	21	21%
Hematochezia	52	52%
Dyspepsia	14	14%
Mass per abdomen	3	3%
Weight loss	55	55%

The most common endoscopic finding was erythema (85%), erosion (75%) and ulcer (72%) followed by petechial hemorrhage (63%) and others.

Endoscopic findings	No. of Cases	Percentage%
Petechial hemorrhage	63	63
Erythema	85	85
Erosion	75	75
Polyp	20	20
Ulcer	72	72
Growth	28	28

In the present study of 100 colonoscopy biopsies, 85 cases were diagnosed as non-neoplastic lesions, 15 cases were neoplastic. Among the neoplastic group there were 1 case of benign lesion, 1 case of borderline lesion and 13 cases were malignant.

Type of lesion	No. of cases	Percent
Non-neoplastic	85	85.0
Neoplastic	Benign neoplastic	1
	Borderline neoplastic	1
	Malignant neoplastic	13
	Total	100
		100.0

The most common histopathological diagnosis was IBD (37%)

followed by Chronic nonspecific colitis (14%) and Solitary rectal ulcer syndrome (12%).

	DIAGNOSIS	NO. OF PATIENTS	PERCENTAGE %
NEOPLASTIC	IBD	37	37
	UNREMARKABLE	3	3.0
	CNSC	14	14.0
	EC	3	3.0
	IC	8	8.0
	SRUS	12	12.0
	TB	3	3.0
	INFLAMMATORY POLYP	1	1.0
	HYPERPLASTIC POLYP	4	4.0
NON NEOPLASTIC	GIST	1	1.0
	POLYP WITH DYSPLASIA	1	1.0
	WELL DIFFERENTIATED ADENOCARCINOMA	8	8.0
	MODERATELY DIFFERENTIATED ADENOCARCINOMA	2	2.0
	POORLY DIFFERENTIATED ADENOCARCINOMA	1	1.0
	SIGNET RING ADENOCARCINOMA	1	1.0
	MUCIN SECRETING ADENOCARCINOMA	1	1.0
	Total	100	100.0

The most common IBD is UC(active) followed by UC(remission). Unfortunately in my study period there were no cases of Crohns disease.

In the present study there was correlation of the clinical diagnosis with the histopathological diagnosis. Out of 64 cases of clinically diagnosed IBD, there were 34 cases of Ulcerative colitis, 12 cases of CNSC, 3 cases of eosinophilic colitis, 7 cases of infectious colitis, 5 cases of SRUS and 1 case of TB colon which was histopathologically confirmed.

Similarly, out of 18 cases of clinically diagnosed neoplasm, 14 cases were confirmed histopathologically as neoplastic. The correlation between clinical diagnosis and histopathological diagnosis was assessed using Fischer's exact test. A statistically significant correlation was found between clinically diagnosed IBD and histopathologically confirmed IBD cases (p value <0.0001). Also a statistically significant correlation was found between clinically diagnosed neoplasm cases and histopathologically confirmed neoplastic cases (p value <0.0001).

CLINICAL DIAGNOSIS	HISTOPATHOLOGICAL DIAGNOSIS								
	UC	CNSC	EC	IC	UR	SRUS	TB COLON	POLYP	NEOPLASTIC
IBD (64)	34	12	3	7	2	5	1		
SRUS (8)	1	1			1	5			
NEOPLASM (18)	1					1	1	1	14
TB (5)	1	1		1		1	1		
POLYP (5)								4	1

Among IBD cases the most common clinical presentation was diarrhea followed by weight loss and pain abdomen. Among CNSC cases the most common clinical presentation was diarrhea followed by

hematochezia. Among SRUS cases the most common clinical presentation was hematochezia.

Histopathological diagnosis	pain in abdomen	Vomiting	constipation	diarrhea	anorexia	Melena	Hematochezia	dyspepsia	mass per abdomen	weight loss
IBD	23	6	7	32	21	11	22	6	0	27
UNREMARKABLE	2	1	1	3	1	0	2	0	0	1
CNSC	9	4	1	12	7	2	8	1	0	5
EC	2	1	0	3	1	1	3	0	0	2
IC	7	1	1	7	5	1	2	1	0	2
SRUS	5	2	4	6	5	0	10	1	0	5
TB	3	1	1	2	3	1	0	3	0	1
INFLAMMATORY POLYP	1	0	1	1	1	0	0	10	0	0
HYPERPLASTIC POLYP	2	1	3	4	1	1	0	1	0	2
GIST	1	0	0	1	1	0	1	0	0	1
POLYP WITH DYSPLASIA	1	1	1	0	0	0	0	0	1	0
WELL DIFFERENTIATED ADENOCARCINOMA	1	1	4	5	3	1	3	1	0	2
MODERATELY DIFFERENTIATED ADENOCARCINOMA	1	1	1	1	2	1	1	0	0	1
POORLY DIFFERENTIATED ADENOCARCINOMA	1	0	1	1	1	1	0	0	1	1
SIGNET RING ADENOCARCINOMA	0	0	0	1	1	1	0	0	1	1
MUCIN SECRETING ADENOCARCINOMA	1	0	0	1	0	0	0	0	0	0
Total	60	20	26	80	53	21	52	14	3	55

Out of 75 erosions in colonoscopy, 30 cases were confirmed as IBD, 12 cases were chronic non specific colitis and 7 were well differentiated adenocarcinoma. Similarly, 72 ulcerative lesions in colonoscopy, histopathological examination revealed, 28 IBD, 11 cases of SRUS, 7

cases each of chronic nonspecific colitis and well differentiated adenocarcinoma. On the other hand, while correlating colonoscopy findings and histopathological diagnosis, among the 28 cases of growth seen on colonoscopy, most of them were neoplasms.

Histopathological diagnosis	Petechial hemorrhage	erythema	erosion	Polyp	Ulcers	growth
IBD	24	33	30	0	28	7
UNREMARKABLE	2	2	2	1	2	1
CNSC	9	12	12	1	7	3
EC	1	3	3	0	3	0
IC	5	7	5	1	7	2
SRUS	7	11	8	1	11	0
TB	2	3	3	2	3	2
INFLAMMATORY POLYP	0	0	0	1	0	0
HYPERPLASTIC POLYP	1	2	1	4	1	0
GIST	1	1	1	0	1	0
POLYP WITH DYSPLASIA	0	0	0	1	0	0
WELL DIFFERENTIATED ADENOCARCINOMA	7	8	7	6	7	8
MODERATELY DIFFERENTIATED ADENOCARCINOMA	1	1	0	1	0	2
POORLY DIFFERENTIATED ADENOCARCINOMA	1	1	1	1	1	1
SIGNET RING ADENOCARCINOMA	1	1	1	0	1	1
MUCIN SECRETING ADENOCARCINOMA	1	0	1	0	0	1
Total	63	85	75	20	72	28

DISCUSSION:

Colonic conditions like infections, IBD, polyps, and colorectal tumors are important lesions which often require colonoscopy guided biopsy for their conclusive diagnosis [4]. Lower endoscopic evaluation is established as the diagnostic procedure of choice in the setting of diarrhea and lower GI bleed. Age range of the patient was 18 years and above with mean age being 48.46 years. These findings were similar to study done by Rangaswamy et al [5] where age ranged from 16-83 years with mean age of 47.78 years. Another study by Shefali et al [6] the age range was from 3 years to 87 years with mean age of 56.6 years. The male to female ratio was 1.27: 1 which showed a high male predisposition of lower gastrointestinal disease. This is consistent with similar studies done by Shefali et al [6] where the male to female ratio was 1.8:1 and in study by Rangaswamy et al [5] male to female ratio was 1.74: 1.8. Since males are more involved in the outdoor activities and they are many times stressed at their job place, they are more prone for IBD. Among 100 cases, chronic diarrhea was the most common symptom (80%), followed by pain abdomen (60%). In the study by Rajbhandari M et al [7] pain abdomen was the most common symptom (38.1%), whereas in study by Shefali et al [6] constipation was the most common symptom (34.6%). Also in study done by Geetha et al [8] the most common symptom was bleeding per rectum (49.3%). The present study is conducted in south eastern part of India where the climate is very hot and humid. This may be a possible reason for predominance of diarrhea as the most common symptom in our study.

In the present study, 85% cases were diagnosed as non-neoplastic, 13 % was malignant and 1% case was benign neoplastic and 1% borderline neoplastic. In a similar study done by Rajbhandari M et al [7] also there was more number of non-neoplastic cases (73.8%), malignant cases were 19.8% and benign was 6.3%. There were no borderline neoplastic cases in other similar studies.

Study	No. of cases	Non Neoplastic	Benign	Malignant
R. H. Teague et al	57	25(43.9%)	15(26.3%)	17(29.8%)
Shefali et al	159	68(42.8%)	23(14.4%)	68(42.8%)
Rajbhandari M et al	126	93(73.8%)	8(6.3%)	25(19.8%)
Present study	100	85(85%)	1(1%)	13(13%)

The most common colonoscopy finding was erythema (85%) followed by erosion (75%) and ulcer (72%). In contrast to this, the study done by Makaju R et al [9] the most common endoscopic finding was polyp (51.57%). Since we were having more IBD cases, this may be the possible reason for erythema as the most common endoscopy finding.

Among the 85 non-neoplastic lesions, ulcerative colitis was found to be the commonest lesion (43.5%) followed by chronic non specific colitis (16.5%). This was in sharp contrast to other studies done by Rajbhandari M et al [7] and Shefali et al [6] where chronic nonspecific colitis was the commonest and ulcerative colitis was relatively less.

Out of histologically confirmed 13 malignant neoplastic cases, most common malignant neoplastic lesion was well differentiated adenocarcinoma (61.5%) which was consistent with the study done by

Geetha et al [10] (39.1%). In similar study done by Shefali et al [6] most common neoplastic lesion was moderately differentiated adenocarcinoma (35.3%).

In the present study, diarrhea was the most common symptom in IBD patients followed by weight loss and pain abdomen. Therefore possibility of IBD should be kept in mind for patients who are presenting with diarrhea and weight loss. Similarity among SRUS patient's hematochezia was the most common complaint. Therefore, for patients who are presenting with hematochezia a possibility of SRUS should be kept in mind.

Among IBD cases, erythema was the most common colonoscopy finding and in SRUS ulcer and erythema were the most common finding in the present study. So possibility of SRUS and IBD should be considered in cases of colonoscopy findings of erythema.

So for making a proper diagnosis, a proper correlation of clinical symptoms and colonoscopy finding with histopathology is needed.

CONCLUSION:

The colon is affected by a spectrum of conditions which span from infectious, idiopathic, inflammatory diseases, polyps, and colorectal tumors. This wide range of non-neoplastic and neoplastic conditions was also encountered in our study. The development of flexible endoscopes has led to the increase in the examination and mucosal biopsy evaluation of all portions of large intestine and rectum. The age distribution of patients who underwent the colonoscopy biopsy ranged from 18 years and above with mean age being 48.46 years, proving that it is a safe and tolerable procedure. A comprehensive histopathological study of colonoscopy biopsy specimens was done in constant correlation with clinical and colonoscopy features. In the present study, histopathological diagnosis correlated well with the colonoscopy diagnosis offered. Colonoscopy, as we know, also plays a key role in diagnosis, follow up and treatment, especially in cases of Inflammatory bowel disease and malignancies. In the present study we found 37 cases of Ulcerative colitis with few clinical diagnosis of Malignancy, hence giving a warning of a chance of development of malignancy. Colonoscopy also permits therapeutic removal of polyps. Biopsy helps in the diagnosis of various familial polyposis and adenomatous polyps, which have a malignant potential. Colonoscopy is currently considered to be gold standard for cancer surveillance and can detect advanced colonic neoplasms in asymptomatic individuals.

RECOMMENDATIONS:

Lower gastrointestinal symptoms now a day is a common problem in clinical practice, for better diagnosis colonoscopy should be followed by biopsy. Routine biopsies should be taken from normal appearing mucosa on colonoscopy from patients suffering from diarrhea. Ccians should be aware of malignant potential of Ulcerative colitis and polyp, so should keep the patient on proper surveillance.

REFERENCES

- Edmonson JM. History of the instruments for gastrointestinal endoscopy.

- Gastrointestinal endoscopy. 1991 Mar 1;37:S27-56.
2. Waye JD, Hunt RH. Colonoscopic diagnosis of inflammatory bowel disease. *The Surgical clinics of North America*. 1982 Oct;62(5):905-13.
3. Teague RH, Salmon PR, Read AE. Fibreoptic examination of the colon: a review of 255 cases. *Gut*. 1973;
4. Qayyum A, Sawan AS. Profile of colonic biopsies in King Abdul Aziz University Hospital, Jeddah. *JPMA. The Journal of the Pakistan Medical Association*. 2009 Sep;59(9):608.
5. Rangaswamy R, Sahadev R, Suguna BV, Preethan KN, Ranjeeta SB. Clinico-colonoscopy and histomorphological spectrum of colonic diseases in an academic tertiary care centre. *Tuberculosis*. 2014 Jan 6;6:7-32.
6. Karve SH, Vidya K, Shivarudrappa AS, Prakash CJ. The Spectrum of colonic lesions: A Clinico-pathological study of colonic biopsies. *Indian Journal of Pathology and Oncology*. 2015;2(4):189-209.
7. Rajbhandari M, Karmacharya A, Khanal K, Dhakal P, Shrestha R. Histomorphological Profile of Colonoscopic Biopsies and Pattern of Colorectal Carcinoma in Kavre District. *Kathmandu University Medical Journal*. 2013;11(3):196-200.
8. Geetha C, Pavani M, Prabhala S, Deshpande AK. Histomorphological spectrum of colonic biopsies: A two year study. *Indian Journal of Pathology and Oncology*. 2018;5(2):242-8.
9. Makaju R, Amatya M, Sharma S, Dhakal R, Bhandari S, Shrestha S. Clinico-Pathological Correlation of Colorectal Diseases by Colonoscopy and Biopsy. *Kathmandu Univ Med J*. 2017;58(2):173-8.
10. Teague RH, Read AE. Polyposis in ulcerative colitis. *Gut*. 1975 Oct 1;16(10):792-5.