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Original Research Article

Histopathological spectrum of lesions in gastrointestinal endoscopic biopsies in Jawahar Lal Nehru Medical College and associated group of Hospitals, Ajmer, Rajasthan

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ABSTRACT

Background: The gastrointestinal tract which extends from the esophagus to anus is a common site for numerous pathological processes from non-neoplastic, pre-neoplastic, to neoplastic. Gastrointestinal tumors including both benign and malignant tumors are the major cause of morbidity and mortality worldwide. Endoscopy in combination with endoscopic biopsy plays an important role in detecting early cancers and/or high-grade dysplasia and in the diagnosis of upper and lower gastrointestinal tract neoplasms and therefore aids in their early management.
Methods: This study was done for 1 year from July 2018 to June 2019 (retrospectively) and over a period of 1 year from July 2019 to June 2020 (prospectively). All endoscopic biopsies samples were received in the department of pathology at J. L. N. Medical College and Associated Group of Hospital, Ajmer, Rajasthan.
Results: The mean age of patients were 51.91±18.86 years and highest incidence of gastrointestinal (GI) disease was seen between the age group of 51-60 years. The male: female (M: F) ratio was 1.46: 1. Non neoplastic lesions are more common than neoplastic lesions. Inflammatory lesion was the most commonly observed lesion followed by malignant lesions. The sensitivity of endoscopy is 96.25%, specificity is 68.67%, the positive predictive value is 74.76% and the negative predictive value is 95%. Accuracy for diagnosis by endoscopy is 82.21%.
Conclusions: Endoscopic biopsy correlation reflects important advances in understanding the pathophysiology of disease and prognosis and survival rates after staging in the case of carcinomas. It provides diagnostic information and aids in improving patient management.

Keywords: Endoscopic, Biopsy, Gastrointestinal

INTRODUCTION

The gastrointestinal tract which extends from the esophagus to anus is 8 meters in length and is a common site for numerous pathological processes from non-neoplastic, pre-neoplastic to neoplastic. Gastrointestinal tumors including both benign and malignant tumors are the major cause of morbidity and mortality worldwide.[1,2]

Gastrointestinal malignancies account for 12.9% of all malignant diseases and 15% of estimated death worldwide.[3-7] They continue to be the second leading cause of cancer-related deaths in the developed world. Colorectal cancer is the 3rd leading cause of death in both men and women.[1,8,9]

The early detection and treatment of gastrointestinal neoplasms have been shown to improve patient survival

significantly. Over the past 30 years or so, endoscopy has become an inconvertible tool for gastroenterologists.[1,10]

Endoscopic biopsies from the gastrointestinal tract form a large proportion of the specimens analyzed in pathology units. At present, inflammatory lesions outnumber neoplastic lesions in endoscopic biopsy material.[11-14] With regards to GI endoscopic biopsies, a great improvement in the diagnostic performance can be achieved by positive interaction between gastroenterologists and a dedicated pathologist. This interaction usually provides the pathologist with more complete clinical and endoscopic information.[11,15,16]

METHODS

This study was done for 1 year from July 2018 to June 2019 (retrospectively) and over a period of 1 year from July 2019 to June 2020 (prospectively). All endoscopic biopsies samples were received in the department of pathology at J. L. N. Medical College and Associated Group of Hospital, Ajmer, Rajasthan.

Biopsy was taken from the margins of the lesion by the specialist and was sent in 10% formalin with endoscopic findings to the pathologist. Histological sections (4 microns thick) were stained with haematoxylin and eosin later prepared from the formalin – fixed, paraffin – embedded tissue. Special stains like modified Giemsa for *Helicobacter pylori*, PAS for intestinal metaplasia were done whenever needed.

Minimal sample size (N) was calculated using the formula below, where Zα is 1.96 at 95% CI, e (allowable error ≈10%), p=prevalence or proportion of event of interest, p=62% (57) and N=60.

$$N = Z\alpha^2 p(1-p)/e^2$$

Inclusion criteria

Patients of all age groups and both sexes and all patients undergoing endoscopic biopsy were included in the study.

Exclusion criteria

All patients undergoing repeat endoscopic biopsy in previously diagnosed and treated cases were excluded from the present study.

All samples that are not labelled properly, are inadequate, and autolyzed were excluded from the present study.

Ethically approved by institutional ethical committee letter no. 256 Acad- III/ MCA/2020.

RESULTS

A total of 163 gastrointestinal biopsies were studied from July 2018 to June 2019 (retrospectively) and from July 2019 to June 2020 (prospectively) over 2 years in the department of pathology, J. L. N. Medical College and Associated Group of Hospital, Ajmer, Rajasthan.

Out of 163 cases, most of the patients were in the age group of 51-60 years followed by the age group 61-70 years. The age range was 11 to 95 years (Table 1).

Table 1: Age wise distribution in study subjects.

Age group (years)	No. of cases	%
11-20	13	7.9
21-30	15	9.2
31-40	19	11.6
41-50	20	12.3
51-60	42	25.8
61-70	35	21.5
71-80	13	8.0
>80	6	3.7
Total	163	100
Mean age	51.91±18.86 years	

Out of 163 patients, 97 were males and 66 were females. The male to female ratio was 1.46:1 (Table 2).

Table 2: Gender wise distribution in study subjects.

Gender	No. of cases	%
Male	97	59.5
Female	66	40.5
Total	163	100

Out of 163 cases, inflammatory lesions were most common in 51-60 years of age. Benign lesions were most common in 21-30 years of age. Premalignant lesions were most common in 51-60 years of age. Malignant lesions were most common in 51-60 years of age (Table 3).

Out of 163 cases, the stomach was the most common site for endoscopic biopsies of which 41 cases were there. Among the 41 cases, 29 cases were males and 12 cases were females. 34 cases were from the esophagus among which 21 cases were males and 13 cases were females. 27 cases were from the duodenum among which 18 cases were males and 9 cases were females, 20 cases were from rectum among which 11 cases were males and 9 cases were females, 19 cases were from colon among which 10 cases were males and 9 cases were females, 9 cases were from gastroesophageal junction among which 4 cases were males and 5 cases were females, 7 cases were from rectosigmoid junction among which 1 case was male and 6 cases were females, 6 cases were from ileum among which 3 cases each were of male and female (Table 4).

Out of 163 cases, 27 cases from the stomach biopsy were of the inflammatory lesion, 9 cases were malignant lesion, 4 cases were premalignant and 1 case was benign. Among the esophageal biopsies, 29 cases were of malignant lesion, 4 cases were premalignant, and 1 case was inflammatory

lesion. Among the gastroesophageal junction biopsies, 7 cases were premalignant, 2 cases were inflammatory lesions. Among the duodenal biopsies, 12 cases were benign, 12 cases were inflammatory, 2 cases were premalignant, 1 case was malignant. Among the ileal biopsy, 6 cases were inflammatory lesions. Among the colonic biopsies, 13 cases were inflammatory lesions, 5 cases were malignant lesions. Among the biopsies from rectosigmoid, 4 cases were inflammatory lesions, 2 cases were malignant and 1 case was of the premalignant lesion. Among the rectal biopsies, 14 cases were malignant, 5 were inflammatory, and 1 case was premalignant (Table 5).

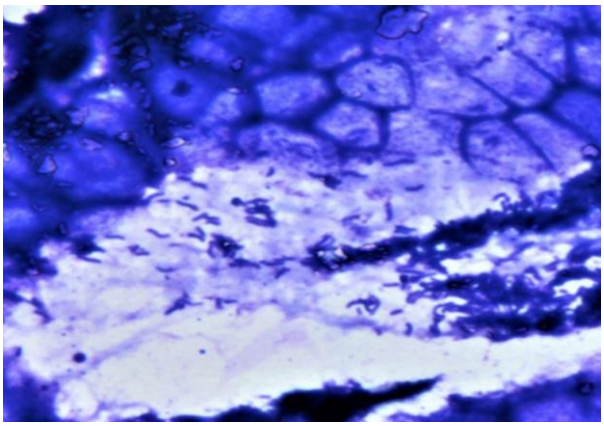

Figure 1: *H. pylori* gastritis. Giemsa, 100 X.

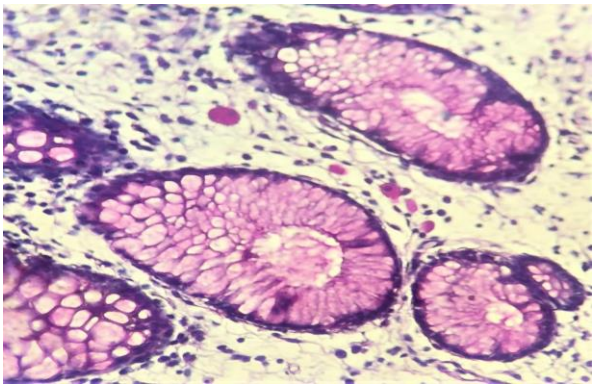

Figure 2: Amoebic colitis, PAS, 40X.

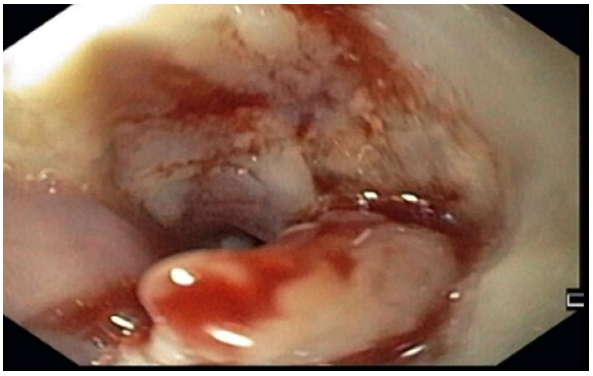

Figure 3: Ulceroproliferative growth esophagus.

Table 3: Age wise distribution of different histological types of lesions (n=163).

Age group (years)	Benign	Inflammatory	Malignant	Pre-malignant
11-20	3	8	2	0
21-30	5	8	1	1
31-40	3	9	6	1
41-50	0	7	7	6
51-60	2	14	19	7
61-70	0	15	18	2
71-80	0	5	5	3
>80	0	4	2	0
Total	13	70	60	20

Table 4: Distribution of gastrointestinal endoscopic biopsies site according to gender.

Site of biopsy	Female	Male	Total
Colon	9	10	19
Duodenum	9	18	27
Esophagus	13	21	34
Gastroesophageal Junction	5	4	9
Ileum	3	3	6
Rectosigmoid	6	1	7
Rectum	9	11	20
Stomach	12	29	41
Total	66	97	163

Table 5: Distribution of benign and malignant tumor histologically according to site (n=163).

Site of biopsy	Benign	Inflammatory lesion	Malignant lesion	Pre-malignant lesion
Colon	0	13	5	1
Duodenum	12	12	1	2
Esophagus	0	1	29	4
Gastroesophageal junction	0	2	0	7
Ileum	0	6	0	0
Rectosigmoid	0	4	2	1
Rectum	0	5	14	1
Stomach	1	27	9	4
Total	13	70	60	20

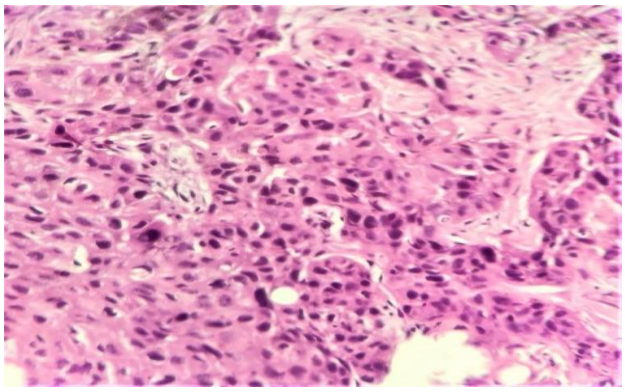

Figure 4: Well-differentiated squamous cell carcinoma esophagus, H&E, 40X.

The diagnostic value and kappa value of endoscopic finding to differentiate between benign and malignant lesions with a sensitivity of endoscopy being 96.25%, specificity being 68.67%, the positive predictive value being 74.76%, the negative predictive value is 95%, accuracy to a diagnosis being 82.21%, kappa value being 0.57 and p value being <0.001 (Table 6).

Out of 103 diagnosed as malignant on endoscopy 59 cases were truly malignant on histopathological examination while 25 cases were inflammatory, 18 cases were pre-malignant and 1 case was benign. Out of 20 cases diagnosed as inflammatory on endoscopy all were truly inflammatory on histopathological examination. Out of 40 cases diagnosed as benign 12 cases were truly benign on histopathology, 25 cases were inflammatory, 1 was malignant and 2 were pre- malignant. Out of 163 cases, 1 case which was diagnosed malignant by endoscopy was diagnosed as benign on histopathological examination. 25 cases diagnosed as benign by endoscopy were diagnosed as inflammatory by histopathological examination and 25 cases diagnosed as malignant by endoscopy were diagnosed as inflammatory by histopathological examination. 2 cases diagnosed as benign by endoscopy were diagnosed as premalignant by histopathological examination. 18 cases diagnosed as malignant by endoscopy are diagnosed as premalignant by histopathological examination (Table 7).

Table 6: Diagnostic value and kappa value of endoscopic finding to differentiate between benign and malignant lesion.

Diagnostic value	%
Sensitivity	96.25
Specificity	68.67
Positive predictive value	74.76
Negative predictive value	95.0
Accuracy	82.21
Kappa value	0.57
P value	<0.001

DISCUSSION

In the present study, the peak incidence of the gastrointestinal lesion was in the 5th and 6th decade. A comparative study done by Sharanabasavaraj et al shows similar results in which the most commonly affected age range was 51-70 years.[17]

The male to female ratio was found to be 1.46:1 in our study which was similar to the studies done by Mohapatra et al and Veerendrasagar et al, Khaled et al, Sharma et al, and Bushra Siddiqui et al.[18-22]

In our study the most common site for endoscopic biopsy was found to be stomach which was similar to the studies done by Maiti et al, Jaffary et al, and Alghamdi et al. The studies done by Sahu et al and Kumawat et al have most common site as colorectum.[23-27]

In the above study the most common lesion was inflammatory which was similar to the studies performed by Sheikh et al, and Shrivastava et al, while in the study performed by Meshram et al the most common lesions were malignant which differs from our study.[28-30]

The above study shows a 66.9% correlation between the endoscopic diagnosis with histopathological diagnosis which is similar to the studies performed by Pailoor et al, Islam et al, Sahu et al, and Sharma et al. While Kazi et al have reported a higher correlation of 88.8% between the two diagnostic procedures.[26,31-34]

CONCLUSION

Endoscopic examination and biopsy are an expedient procedure for correct assessment of patients with gastrointestinal symptoms. It is recommended as the first investigation in the workup of patients with dyspepsia. Our study revealed that non- neoplastic lesions were more common than the neoplastic ones. The correlation of endoscopic and histopathological findings was found to be 66.9% on the basis of initial biopsy. Rebiopsy/resection improved the rate of correlation. We concluded that endoscopy is incomplete without biopsy and histopathology is the gold standard in the diagnosis of endoscopically detected lesions. The biopsy samples can be further confirmed by resection specimens. Endoscopic biopsy correlation reflects important advances in understanding the pathophysiology of disease and prognosis and survival rates after staging in the case of carcinomas. It provides diagnostic information and aids in improving patient management.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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