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Original Research Article

A Prospective Study assessing Histopathological Profile of Gastrointestinal Endoscopic Biopsy

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Conflict of interest: Nil

Abstract:

Aim: The aim of the present study was to assess the histopathological spectrum of gastrointestinal endoscopic biopsy.

Material & Methods: A prospective study was conducted on the GIT endoscopic biopsies and their histopathological assessment was done at Department of Pathology, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India for six months. Endoscopies were performed using an endoscope. The biopsy specimens received were fixed in 10.0% formalin and routinely processed in H & E stain.

Results: Out of 200 cases, most of the patients were in the age group of 51-60 years followed by the age group 61-70 years. Out of 200 patients, 120 were males and 80 were females. Out of 200 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. Out of 200 cases, the stomach was the most common site for endoscopic biopsies of which 48 cases were there. 37 cases were from the esophagus among which 22 cases were males and 15 cases were females. 35 cases were from the duodenum among which 25 cases were males and 10 cases were females, 23 cases were from rectum among which 13 cases were males and 10 cases were females, 25 cases were from colon among which 15 cases were males and 10 cases were females, 13 cases were from gastroesophageal junction among which 5 cases were males and 8 cases were females, 10 cases were from rectosigmoid junction among which 2 cases was male and 8 cases were females, 9 cases were from ileum among which 4 cases was male and 5 cases were females.

Conclusion: 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: Celiac disease Gastritis Helicobacter Pylori

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 nonneoplastic, pre-neoplastic to neoplastic.[1] Disorder of gastrointestinal tract is one of the most commonly encountered problems in clinical practice. A high degree of mortality and morbidity is caused by them. [2] Lesions of the gastrointestinal tract include neoplastic and non-neoplastic lesions like infections, inflammation, vascular disorders, physical and toxic injury etc. [3] Gastrointestinal tumors including both benign and malignant tumors are the major cause of morbidity and mortality worldwide.[4] Gastrointestinal malignancies account for 12.9% of all malignant diseases and 15% of estimated death worldwide.[5]

There are several diagnostic investigations available in the evaluation of these symptoms where endoscopy is performed as the initial diagnostic test. [1] 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.[1,6] Endoscopic biopsy is a convenient procedure and no major surgery is required. Reaching the inaccessible sites in the gastrointestinal tract is facilitated by the use of an endoscope or colonoscope which helps in direct visualizing the lesion and taking of biopsy from the suspicious site.

An endoscopic or colonoscopy biopsy for histopathologic examination is not only used to diagnose malignant and inflammatory lesions but also for monitoring the course, the extent of disease, response of the therapy and early detection of complications.[7] It forms a large proportion of the

specimens that are analyzed in the pathology department and considered as the current gold standard for accurate assessment of patients with symptoms of Gastrointestinal tract disease. At present, inflammatory lesions outnumber neoplastic lesions in endoscopic biopsy material. [8-11]

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.

Our study aimed to analyse the various histopathological categories of gastrointestinal tract lesions, with endoscopic and histopathological correlation and evaluation of the usefulness of endoscopic biopsy for efficient diagnosis and management.

Material and Methods

A prospective study was conducted on the GIT endoscopic biopsies and their histopathological assessment was done at Department of Pathology, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India for six months. Endoscopies were performed using an endoscope. The biopsy specimens received were fixed in 10.0% formalin and routinely processed in H & E stain.

Inclusion Criteria

1. All gastrointestinal tract endoscopic biopsies of all age and sex.

Exclusion Criteria

2. Inadequate biopsies.
3. Resection specimen.
4. Liver and gall bladder specimen.

Methodology

These filter paper mounted biopsies were received in the properly labelled and tightly closed container containing 10% formalin. Which was then examined grossly for the number and appearance. After fixation biopsy was processed and embedded in paraffin with orienting the specimen mucosal surface uppermost. Three to four micron thick sections were cut perpendicular to this surface. Sections were stained with routine Hematoxylin and Eosin stain (H and E) and mounted with coverslips using Distyrene Plasticizer Xylene (DPX) as mountant. Additional sections were stained with Giemsa to observe H. Pylori and Periodic Acid Schiff (PAS) stain were performed wherever necessary. Analysis of the spectrum of the lesion as done. For celiac disease Modified Marsh classification4 was done on duodenal biopsies. All tumours were classified according to WHO classification.

Results

Table 1: Age wise distribution in study subjects

Age group (years)	No. of cases	%
11-20	16	8
21-30	20	10
31-40	22	11
41-50	24	12
51-60	50	25
61-70	44	22
71-80	16	8
>80	8	4
Total	200	100
Mean age	50.95±16.74 years	
Gender		
Male	120	60
Female	80	40

Out of 200 cases, most of the patients were in the age group of 51-60 years followed by the age group 61-70 years. Out of 200 patients, 120 were males and 80 were females.

Table 2: Age wise distribution of different histological types of lesions

Age group (years)	Benign	Inflammatory	Malignant	Pre-malignant
11-20	4	10	2	0
21-30	6	12	1	1
31-40	4	10	7	1
41-50	0	9	9	6
51-60	4	18	22	6
61-70	0	20	22	2
71-80	0	6	6	4

>80	0	5	3	0
Total	18	90	72	20

Out of 200 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: Distribution of gastrointestinal endoscopic biopsies site according to gender

Site of biopsy	Female	Male	Total
Colon	10	15	25
Duodenum	10	25	35
Esophagus	15	22	37
Gastroesophageal Junction	8	5	13
Ileum	5	4	9
Rectosigmoid	8	2	10
Rectum	10	13	23
Stomach	14	34	48
Total	80	120	200

Out of 200 cases, the stomach was the most common site for endoscopic biopsies of which 48 cases were there. 37 cases were from the esophagus among which 22 cases were males and 15 cases were females. 35 cases were from the duodenum among which 25 cases were males and 10 cases were females, 23 cases were from rectum among which 13 cases were males and 10 cases were females, 25 cases were from colon among which 15 cases were males and 10 cases were females, 13 cases were from gastroesophageal junction among which 5 cases were males and 8 cases were females, 10 cases were from rectosigmoid junction among which 2 cases was male and 8 cases were females, 9 cases were from ileum among which 4 cases was male and 5 cases were females.

Table 4: Diagnostic value and kappa value of endoscopic finding to differentiate between benign and malignant lesion

Diagnostic value	%
Sensitivity	95.25
Specificity	67.64
Positive predictive value	75.79
Negative predictive value	96.0
Accuracy	83.27
Kappa value	0.58
P value	<0.001

The diagnostic value and kappa value of endoscopic finding to differentiate between benign and malignant lesions with a sensitivity of endoscopy being 95.25%, specificity being 67.64%, the positive predictive value being 75.79%, the negative predictive value was 96%, accuracy to a diagnosis being 83.27%, kappa value being 0.58 and p value being <0.001.

Discussion

Gastrointestinal biopsies constitute a major group of specimens received in the surgical pathology department in a tertiary care hospital. This includes endoscopic biopsies from gastric and duodenal mucosa, appendicectomies, cholecystectomies and colonoscopic biopsies, colectomies etc. [12] Endoscopy and colonoscopy guided biopsies are the preferred forms of investigation in the surgical department which provides critical information for diagnosis and hence treatment.[13] Histopathological diagnosis is essential in cases of polypoid lesions, ulcerative lesions and in dubious lesions on endoscopy.[14]

Out of 200 cases, most of the patients were in the age group of 51-60 years followed by the age group 61-70 years. Out of 200 patients, 120 were males and 80 were females which was also observed in other studies done by Sandhya PG et al [15], Rashmi K et al [16] and Shennak MM et al. [17] The gender ratio favouring males could be because of fact that males are exposed to more risk factors than female and gastrointestinal malignancies are more common in male. Out of 200 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. Out of 200 cases, the stomach was the most common site for endoscopic biopsies of which 48 cases were there. 37 cases were from the

esophagus among which 22 cases were males and 15 cases were females. 35 cases were from the duodenum among which 25 cases were males and 10 cases were females, 23 cases were from rectum among which 13 cases were males and 10 cases were females, 25 cases were from colon among which 15 cases were males and 10 cases were females, 13 cases were from gastroesophageal junction among which 5 cases were males and 8 cases were females, 10 cases were from rectosigmoid junction among which 2 cases was male and 8 cases were females, 9 cases were from ileum among which 4 cases was male and 5 cases were females. 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.[18-22]

Sahu et al in their study on lower gastrointestinal endoscopy observed that 52% of the total colonoscopic biopsies only had pathology.11 Inflammation of the colonic mucosa may exhibit varied types like chronic colitis, diffuse active colitis, focal active colitis, ischemic type colitis and intraepithelial lymphocytosis. Other special forms of colitis are collagenous colitis, lymphocytic colitis, acute ischemic colitis and eosinophilic colitis. In a study conducted by Azhar Qayyum, it was found that tubular adenoma is the most common neoplastic polyp among the colonic polyps. Similarly, in this study also, tubular adenomas accounted for 75% of neoplastic polyps.[23-27]

The diagnostic value and kappa value of endoscopic finding to differentiate between benign and malignant lesions with a sensitivity of endoscopy being 95.25%, specificity being 67.64%, the positive predictive value being 75.79%, the negative predictive value was 96%, accuracy to a diagnosis being 83.27%, kappa value being 0.58 and p value being <0.001.

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.

References

1. Trisal M, Goswami KC, Khajuria A. A study of Histopathological spectrum of Gastrointestinal Endoscopic Biopsies in a tertiary care centre. Saudi J Pathol Microbiol. 2008;3:226-34.
2. Hirachand S, Sthapit RR, Gurung P, Pradhanang S, Thapa R, Sedhai M, et al. Histopathological spectrum of upper gastrointestinal endoscopic biopsies. J BP Koirala Inst Health Sci. 2018;1(1):67–74.
3. Memon DF, Baloch DK, Memon DAA. Upper gastrointestinal endoscopic biopsy; morphological spectrum of lesions. Professional Med J. 2015;22(12):1574–9
4. Nelson RS. Gastroscopic Photography. Gatroenterology. 1958;35(1):74.
5. Venkatesh V, Thaj RR. Histopathological Spectrum of Lesions in Gastrointestinal Endoscopic Biopsies: A Retrospective Study in A Tertiary Care Center. World Journal of Pathology. 2019 Feb 19;8(1).
6. Richard H Hunt. A brief history of endoscopy. Gastro J. 2001;121:738-9.
7. Kelley JR, Duggan JM. Gastric cancer epidemiology and risk factors. J Clin Epidemiol. 2003;56(1):1-9.
8. Fiocca R, Ceppa P. Endoscopic biopsies. J Clin Pathol. 2003;56(5):321-2.
9. Dundas SA, Dutton J, Skipworth P. Reliability of rectal biopsy in distinguishing between chronic inflammatory bowel disease and acute self-limiting colitis. Histopathology. 1997;31:60-6.
10. Tanaka M, Riddell RH, Saito H, et al. Morphologic criteria applicable to biopsy specimens for effective distinction of inflammatory bowel disease from other forms of colitis and of Crohn's disease from ulcerative colitis. Scand J Gastroenterol. 1999;34:55- 67.
11. Cross SS, Harrison HF. Discriminant histological features in the diagnosis of chronic idiopathic inflammatory bowel disease: analysis of a large dataset by a novel data visualisation technique. J Clin Pathol. 2002;55:51-7.
12. Rashmi K, Horakerappa MS, Karar A, Mangala G. A study on histopathological spectrum of upper gastrointestinal tract endoscopic biopsies. Int J Med Res Health Sci. 2013;2(3):418-24.
13. Mills SE, Carter D, Greenson JK, Oberman HA, Reuter V, Stoler MH. In:Sternberg's diagnostic surgical pathology. 4th ed. Philadelphia: Lippincott Williams and Wilkins. 2004.
14. Ohkuma K, Okada M, Murayama H, Seo M, Maeda K, Kanda M, et al. Association of Helicobacter pylori infection with atrophic

gastritis and intestinal metaplasia. J Gastroenterol Hepatol. 2000;15(10):1105-12.
15. Shennak MM, Tarawneh MS, Al Sheik. Upper gastrointestinal diseases in symptomatic Jordanians: A prospective study. Ann Saudi Med. 1997; 17(4):471-4.
16. Rashmi K, Horakerappa MS, Karar A, Mangala G. A study on histopathologic spectrum of upper gastrointestinal tract endoscopic biopsies. Int J Medical Res Health Sciences. 2013; 2(3):418-24.
17. Jaynul Islam SM, Mostaque Ahmed ASM, Uddin Ahamad MS, Hafiz SAMMA. Endoscopic and histologic diagnosis of upper gastrointestinal lesions, experience in a Port City of Bangladesh. Chattagram Maa-o-Shishu Hospital Medical College Journal. 2014; 13(3):11-4.
18. Maiti B, Bhattacharya S, Roy AD. Histopathological spectrum of upper gastro-intestinal malignancies in endoscopic biopsy and helicobacter pylori status in gastric malignancy. J Evid Based Med Healthc. 2018;5(23):1765-8.
19. Jaffary M, Ahsen W, Babar MA. Endoscopic Assessment of Upper Gastrointestinal Tract Lesions among Rural Community. P J M H S. 2018;12(2):657-59.
20. Alghamdi T, Ali MMA, Khalaf MA, Ibrahim OM, Alshumrani M. The Distribution and Histopathological Patterns of Gastrointestinal Tract Endoscopic Biopsies in Al Baha, Saudi Arabia. J Gastrointest Dig Syst. 2020;10:7.
21. Sahu S, Suryakant WA, Jaiswal R. Endoscopic biopsies - A boon to diagnose gastrointestinal tract diseases. IAIM. 2019;6(12):47-56.
22. Kumawat N, Shah S, Goswami H. A study of histopathological spectrum of gastrointestinal tract lesions in a tertiary care centre. Int J Clin Diagnostic Pathol. 2021;4(2):09-12.
23. Sahu S, Husain M, Sachan P. Clinical spectrum and diagnostic yield of lower gastrointestinal endoscopy at a tertiary centre. The Internet Journal of Surgery 18:1.
24. Qayyum A, Sawan AS. Profile of colonic biopsies in king Abdul Aziz university hospital, Jeddah. J Pak Med Assoc. 2009;59(9).
25. Yen EF, Pardi DS. Non-IBD colitides (eosinophilic, microscopic). Best Practice & Research Clinical Gastroenterology. 2012;26:611-22.
26. Silva JG, Brito T, Cintra DAO, Laudanna AA, Sipahi AM. Histologic study of colonic mucosa in patients with chronic diarrhea and normal colonoscopic findings. J Clin Gastroenterology, 2006;40:44-8.
27. GUIDELINE: Appropriate use of gastrointestinal endoscopy. American Society for Gastrointestinal Endoscopy (ASGE). Gastrointest. Endosc. 2012;75(6):1127-31.