

Clinicopathological Study of Gastroduodenal Biopsies and Correlate with Endoscopic Findings in Northeast India- A One- Year Cross-sectional Study in a Tertiary Care Centre

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Abstract

Background: The gastrointestinal tract (GIT) is a hollow muscular tube extending from the oral cavity to the anus. Acid peptic disease is among the most common disorders affecting this region globally, caused by an imbalance between acid secretion and gastric mucosal defenses. Endoscopy has enhanced the accuracy and early histologic diagnosis of mucosal lesions. This cross-sectional study examines 100 gastroduodenal biopsies over a one-year period. **Methods:** The study categorized histopathological findings from gastro-duodenal biopsies collected via endoscopy and analyzed their correlation with endoscopic results. **Results:** Gastroduodenal lesions were more prevalent in males, particularly in the fifth decade of life. Endoscopic findings included 12 normal cases, 31 ulcers, 15 erosions, 4 polyps, and 38 malignancies. Among the 38 malignancies, 10 were premalignant, 23 were diagnosed as gastric carcinoma, and 4 as duodenal carcinoma, demonstrating a strong correlation between endoscopic and histopathological findings. **Conclusion:** Endoscopic gastroduodenal biopsies are instrumental in diagnosing both benign and malignant lesions across various age groups and sites. The combination of endoscopy and histopathological analysis provides a powerful diagnostic tool for better patient management.

Keywords: Endoscopy- endoscopic biopsy- gastroduodenal biopsy- endoscopic gastroduodenal biopsy

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Introduction

Gastrointestinal problems are very common nowadays and most people are likely to experience gastrointestinal symptoms throughout their lives [1]. The most frequently encountered disorder of this region is the Acid peptic disease [2]. Gastrointestinal endoscopy is considered accurate for the diagnosis of acid peptic diseases. It allows the physician to visualize and biopsy the upper gastrointestinal tract including the esophagus, stomach and duodenum [3]. The diseased organs could be identified by the gastro pathologist only after the organ was removed from the body of the patient before the invention of endoscope. In 1960s, the introduction of fibre-optic endoscopes has greatly improved the diagnostic facility for various gastrointestinal lesions. Therefore, nowadays endoscopy of the upper gastrointestinal tract is considered a routine procedure and it has also superseded the barium

meal study as the primary diagnostic option. Also using the biopsy forceps, tissue specimen can be removed from various lesions under direct vision. Apart from diagnostic utility, endoscopic biopsies are also used to monitor the course of the disease, extent of the disease, to detect complications and to assess the response to therapy. Hence, these are considered one of the useful methods for investigation of gastrointestinal lesions [4].

Aim of the Study

The study aims to see the correlation of histopathological findings of gastroduodenal biopsy with the endoscopic findings.

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Materials and Methods

This is a hospital based cross sectional study which has been carried out in the Department of Pathology in collaboration with the department of Gastroenterology for a period of 1 year from July 2020 to June 2021. A total of 100 patients with chronic upper abdominal symptoms are selected for the study. The tissue is processed, sections are made of 3 micrometre thickness and then stained with Haematoxylin and Eosin stain.

Exclusion Criteria

Biopsy done for therapeutic purpose, cases where biopsy cannot be done, or where consent not given and autolysed specimen were excluded.

Ethical Issue

The study has been ethically approved by the Institutional ethical committee (letter no- 190/2007/dt-11/dec-2019/61). The patients were explained about the research project and written consent was taken from patients or guardians in case of minors.

Results

A total number of 100 patients who underwent gastroduodenal biopsies and fulfilled the inclusion criteria as per stated were enrolled during the study. The age of the patients varied from 25 to 84 years with peak incidence in the 5th decade. 59 cases were from gastric region and rest 41 cases were from the duodenum.

31 cases were diagnosed as ulcer on endoscopy, 15 cases as erosion, 4 cases as polyp and 38 cases as growth. 12 cases were found to have normal endoscopic finding (Table 1).

Maximum number of dyspeptic patients presented as ulcer on endoscopy. Maximum number of pain abdomen patients presented as growth on endoscopy. Thus when we have correlated the finding of endoscopy with clinical presentation, the association is found to be statistically significant (χ^2 value 114.6, p value is <0.0001) (Table 2). The age group 41-50 years had the highest number of cases of ulcer. The age group 31-40 years had the highest number of cases of erosion. The age group 51-60 years had the highest number of malignant cases.

Out of the 31 cases of ulcer, 16 cases were diagnosed as Gastritis and 15 cases were diagnosed as Duodenitis on histopathological examination. Out of the 15 cases of erosion, 8 cases were diagnosed as Gastritis, 3 cases were

Table 1. Distribution of the Cases According to Endoscopic Finding

Category	No of cases (N=100)	Percentage (N=100) (%)
Normal	12	12
Ulcer	31	31
Erosion	15	15
Polyp	4	4
Growth	38	38

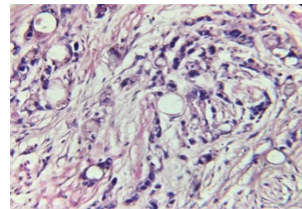


Figure 1. Well Differentiated Adenocarcinoma of Stomach

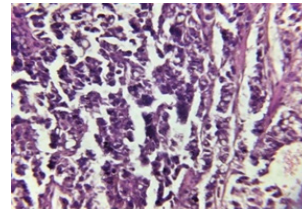


Figure 2. Moderately Differentiated Adenocarcinoma of Stomach

diagnosed as Duodenitis and 1 case as premalignant on histopathological examination. Out of the 4 cases of polyp, 3 cases were diagnosed as polyp and 1 case as Duodenitis on histopathological examination. Out of the 38 cases of growth, 10 cases were diagnosed as premalignant, 23 cases were diagnosed as Carcinoma Stomach and 4 cases were diagnosed as Carcinoma Duodenum (Table 3) (Figures 1-4).

Out of the 12 normal endoscopic cases, 2 cases were diagnosed as Duodenitis, 1 case as Gastritis on histopathological examination.

When we correlate endoscopic findings with histopathological findings, the association was found to be statistically significant (χ^2 value 235.7, p value is <0.0001).

The sensitivity, specificity and positive predictive value of endoscopy and histopathological correlation are 100%, 94.5% and 87.1% respectively. The accuracy is 96%.

Maximum cases (87%) of gastric carcinoma presented as ulcerative growth on endoscopy followed by polypoidal growth (4.3%) and diffuse growth (8.7%) (Table 4).

Discussion

The upper GI endoscopy is the diagnostic tool of choice to detect gastroduodenal diseases. Endoscopic examination should always be accompanied by biopsy. Current data suggest that gross visualization alone cannot detect gastric mucosal diseases, only histologic examination can provide accurate diagnosis. In the present study, out of the 100 gastroduodenal biopsies, 59 cases were from gastric region and rest 41 cases were from the duodenum. The present study is consistent with the studies made by Shanmugasamy K et al [5], Vijayabasker Mithun KR et al [6], S. Hirachand et al [7], Deepa Rani et al [8] and Veenaa Venkatesh et al [9] which shows that gastric biopsies are more common compared to duodenal biopsies.

In the present study, the number of male patients were

Table 2. Distribution of Cases Correlating Clinical Presentation with Endoscopic Findings

Presenting complaints	Endoscopic findings				
	Normal	Ulcer	Erosion	Polyp	Growth
Pain abdomen (n=48)	1	7	5	3	32
Dyspepsia (n=32)	7	13	6	2	4
Vomiting (n=25)	0	6	4	3	12
Nausea (n=25)	3	11	4	2	5
Loss of weight (n=27)	0	0	2	0	25
Loss of appetite (n=33)	3	1	5	1	23
Epigastric pain (n=11)	2	7	2	0	0
Heart burn (n=10)	1	8	1	0	0
Belching (n=7)	0	2	0	0	5
Hematemesis (n=7)	0	3	1	0	3
Jaundice (n=2)	0	0	0	0	2

χ^2 value 114.6, p value <0.0001

Table 3. Distribution of Cases with Respect to Endoscopic Findings and Histopathological Findings

Endoscopic findings N= 100	Histopathological findings (N=100)								
	Normal	Gastritis	Duodenitis	Polyp	Celiac Disease	Metaplasia	Dysplasia	Carinomma Stomach	Carcinoma Duodenum
Normal	6	1	2	0	3	0	0	0	0
Ulcer	0	16	15	0	0	0	0	0	0
Erosion	0	8	3	0	3	1	0	0	0
Polyp	0	0	1	3	0	0	0	0	0
Growth	0	1	0	0	0	1	9	23	4
Total (n=100)	6	26	21	3	6	2	9	23	4

χ^2 value 235.7, p value is <0.0001

65 and female patients were 35. Male (M): female (F) ratio is 1.85: 1. The present study is consistent with the studies made by Dr Vishwapriya M. Godkhindi et al [10], Poonam Sharma et al [11] and S. Hirachand et al [7] which shows male preponderance in gastroduodenal lesions.

In the present study, the highest number of cases were in the age group of 41-50 years followed by 51-60 years. The present study is consistent with the studies made by Shanmugasamy K et al [5], Manasa P Kumari et al [12], Vijayabasker Mithun KR et al [6] and Kaur Manpreet et al [13] which show that gastroduodenal lesions are more common in the 5th and 6th decade of life.

In the present study, the most common clinical complaint was pain abdomen followed by dyspepsia. The present study is consistent with the studies done by Dr Vishwapriya M. Godkhindi et al [10], Rosy Khandelia et al [14] and Sharma S et al [15] which show that pain abdomen is the most common presenting symptom but not consistent with Sonam Pruthi S et al [16] and Shanmugasamy K et al [5] which show dyspepsia as the most common presenting symptom. This disparity may be due to food habits, geographic variations or social habits. In the present study, the most common endoscopic findings was ulcer followed by erosion. The present study was not consistent with the studies made by Sonam Pruthi S et al [16], Manasa P Kumari et al [12] and Kaur

Manpreet et al [13] which showed that the most common endoscopic finding was erosion. This disparity may be due to geographical or topographical variation, food habits or socioeconomic factors.

In the present study, out of the 31 cases of ulcer on endoscopy, 16 cases were diagnosed as Gastritis and 15 cases were diagnosed as Duodenitis on histopathological examination. Out of the 15 cases of erosion on endoscopy, 8 cases were diagnosed as Gastritis, 3 cases were diagnosed as Duodenitis and 1 case as premalignant on histopathological examination. Out of the 4 cases of polyp on endoscopy 3 cases were diagnosed as polyp and 1 case as Duodenitis. Out of the 38 cases of growth on endoscopy, 10 cases (26.3%) were diagnosed as premalignant, 23 cases (60.5%) were diagnosed as Carcinoma Stomach and 4 cases (10.5%) were diagnosed as Carcinoma Duodenum.

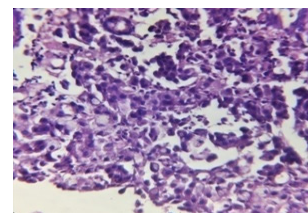


Figure 3. Diffuse Adenocarcinoma with Signet Ring Cells of Stomach

Table 4. Distribution of the Cases According to Endoscopic Appearance of Gastric Carcinoma in Our Study

Endoscopic Appearance	Total cases (N=23)	Percentage (n=100)
Ulcerative	20	87
Polypoid	1	4.30
Diffuse	2	8.70
Nodular	0	0
Total	23	

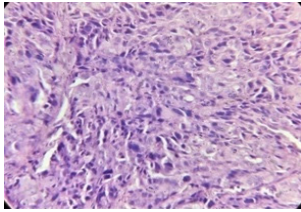


Figure 4. Periapillary Adenocarcinoma of Duodenum

Thus we found a positive correlation between endoscopic and histopathological findings. The present study is consistent with Grace H el ta et al [17], Pailoor K et al [18] and Sharma S et al

[15] but not consistent with Sharma S et al [19] and Poudel A et al [20]. This disparity may also be because of geographic and topographical variations, food habits or personal habits.

In the present study, gastric malignancy endoscopically presented most commonly as ulcerative growth followed by polypoidal growth. The present study is consistent with the studies made by Pailoor K et al [18], Kirana Pailoor et al [21], Sharma S et al [19] and Anunayi Jeshtadi et al [22] which show that the most common endoscopic appearance of gastric carcinoma is ulcerative growth.

Strength of the Study

Premalignant lesions are found among study population which show that early detection with the help of endoscopy and biopsy will help in prompt intervention and better management of the patient.

Weakness of the Study

The limitation of the present study is the sample size which is very less and done for a very short duration. The study is a hospital based study due to which follow up of the cases were not possible

In conclusion, Endoscopy is a less invasive non-surgical procedure. Endoscopic gastroduodenal biopsies help in detecting benign as well as malignant lesions. Endoscopic examination is recommended as the first line of investigation in the work up of a patient with chronic upper abdominal symptoms. Our study showed better correlation with endoscopic findings in cases of malignant lesions but poor correlation in benign lesions with those of histopathological diagnoses. Endoscopic examination alone might miss out in diagnosing majority of the lesions. The combination of endoscopy and histopathological study of gastroduodenal biopsy provide a powerful diagnostic tool for better management of patients.

Acknowledgements

Statement of Transparency and Principal

- Author declares no conflict of interest
- Study was approved by Research Ethic Committee of author affiliated Institute .
- Study's data is available upon a reasonable request.
- All authors have contributed to implementation of this research.

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