Janaki Medical College Journal of Medical Sciences (2025); Vol.13 (1):61-67

JMCJMS

Research Article

Histopathological findings of Endoscopic Gastric Biopsies of Patients attending a Tertiary Care Hospital

Rajendra Maharjan[1,2]

Author's Affiliations

[1]Department of Pathology, Manipal College of Medical Sciences, Pokhara, Nepal
[2]Department of Pathology, Nepal Armed Police Force Hospital, Kathmandu, Nepal

Correspondence to:
Dr. Rajendra Maharjan
Department of Pathology, Nepal Armed Police Force Hospital, Kathmandu, Nepal
Email: docryanm10@gmail.com

ABSTRACT

Background & Objectives: Chronic gastritis, is an inflammatory condition of the gastric mucosa, which can affect various parts of the stomach, causing degrees of mucosal damage. The purpose of this study was to find out the prevalence of histopathological findings of gastric mucosal biopsies among patients at a tertiary care hospital.

Materials and Methods: A descriptive cross-sectional study was done among outpatients from January 9, 2017, to June 8, 2018, along with ethical approval from the Institutional Review Committee (Reference number: 12252016). Biopsy samples were collected from the antral mucosa, corpus, and angularis incisura mucosa of patients who underwent upper gastrointestinal endoscopies. Socio-demographic details and histopathological findings were noted. Convenience sampling was utilized, and the point estimate and 95% Confidence Interval were calculated.

Results: Among 385 hospital-visiting patients, 80 (20.78%) had histopathological abnormalities (19.14-22.42, 95% Confidence Interval) with mean age of 69.90±15.32 years. Among patient with histopathological findings, eighty patients (100%) had dyspepsia, and 29 (36.30%) had ulcers findings on endoscopy, with higher prevalence in males and those aged 61-70 years. Provisional endoscopic diagnosis showed malignancies in 32 (40.00%) patients, but histopathological diagnosis revealed chronic gastritis in 40 (50.00%) patients.

Conclusion: In patients who had undergone histopathological assessment, dyspepsia was frequently diagnosed by endoscopy, but chronic gastritis on histopathological assessment, most commonly in men and older adults.

Keywords: Dyspepsia, Gastritis, histopathology, Malignancy, Ulcer

INTRODUCTION

Gastric mucosal inflammation, known as chronic gastritis, may cause nausea, vomiting, or pain on epigastric region, and can damage glandular structures, leading to gastric atrophy. This condition increases the risk of gastric cancer fivefold [1-3].Globally, approximately 700,000 people are killed by gastric cancers annually, ranking fourth in incidence and second in mortality [4].

Chronic gastritis often starts as an acute condition that typically remains untreated, leading to persistent injuries or sequelae [1]. The histopathological findings, including dysplasia and adenocarcinoma, can be detected using upper gastrointestinal flexible fibropticendoscope easily and quickly [4]. However, lower socioeconomic countries are facing a significant number of deaths due to gastric cancer and ulcers [2]. The histopathological study of endoscopic gastric biopsies detects exact diagnosis and helps in further management. It can detect the early stages of neoplastic lesions and helps in preventing progression of these lesions to invasive cancer [5].

Thus, the present study investigated the prevalence of abnormalities on histopathological assessment of gastric biopsies, along with demographic details and histopathological findings among hospital-visiting patients.

Materials and Methods This descriptive cross-sectional study was conducted in the Department of Pathology at Manipal College of Medical Sciences in Pokhara, Nepal, from January 9, 2017, to June 8, 2018. Ethical approval was given by the Institutional Review Committee of Manipal College of Medical Sciences (Reference number: 12252016). The study population included patients aged 21–87 who had clinical signs of histopathological gastric abnormalities. It included all endoscopic gastric biopsies with histopathological features of chronic gastritis received during the study period. Patients with incomplete records or or whose biopsy samples were insufficient for reporting were excluded. A convenience sampling method was employed.

The sample size was calculated using the following formula:

$n = Z^2 \times p \times q / e^2$

$= (1.96)2 \times 0.5 \times 0.5 / (0.05)^2$

$= 384.16$

Where,

n= required sample size

Z= 1.96 at 95% confidence interval (CI)

p = prevalence of histopathological abnormalities

q= 1-p

e= margin of error, 5%

Hence, the minimum sample size required was 385.

The patient information sheet was used for demographic details and histopathological findings. Incomplete or unclear records were ruled out through effective communication with the healthcare personnels involved. After obtaining informed consent from

participants, all personal identifiers were removed.

Five endoscopic biopsy samples were collected: two from the antral mucosa, one from the angularis incisura, and two from the corpus (oxyntic) area. These samples were stored in separate vials, labeled accordingly, and sent to the Department of Pathology. A provisional endoscopic diagnosis was made based on the endoscopic findings. The biopsy specimens were immediately fixed in neutral-buffered 10% formalin for histological examination. From each block, 3-4 micron thick sections were made and stained with Hematoxylin and Eosin (H&E) and Giemsa stains. The slides were examined carefully, and notes were made of all histopathological parameters. The cases were reported using the Updated Sydney System [6].

The data were entered using Microsoft Excel version 10.0, and the analysis was performed using IBM SPSS Statistics version 17.0. A point estimate was calculated, along with a 95% confidence interval.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted in the Department of Pathology at Manipal College of Medical Sciences in Pokhara, Nepal, from January 9, 2017, to June 8, 2018. Ethical approval was given by the Institutional Review Committee of Manipal College of Medical Sciences (Reference number: 12252016). The study population included patients aged 21–87 who had clinical signs of histopathological gastric abnormalities. It included all endoscopic gastric biopsies with histopathological features of chronic gastritis received during the study period. Patients with incomplete records or or whose biopsy samples were insufficient for reporting were excluded. A convenience sampling method was employed.

The sample size was calculated using the following formula:

$n = Z^2 \times p \times q / e^2$

$= (1.96)2 \times 0.5 \times 0.5 / (0.05)^2$

$= 384.16$

where,

n= required sample size

Z= 1.96 at 95% confidence interval (CI)

P = prevalence of histopathological abnormalities

q= 1-p

e= margin of error, 5%

Hence, the minimum sample size required was 385.

The patient information sheet was used for demographic details and histopathological findings. Incomplete or unclear records were ruled out through effective communication with the healthcare personnels involved. After obtaining informed consent from participants, all personal identifiers were removed.

Five endoscopic biopsy samples were collected: two from the antral mucosa, one from the angularis incisura, and two from the corpus (oxyntic) area. These samples were stored in separate vials, labeled accordingly, and sent to the Department of Pathology. A provisional endoscopic diagnosis was made based on the endoscopic findings. The biopsy specimens were immediately fixed in neutral-buffered 10% formalin for histological examination. From each block, 3-4 micron thick sections were made and stained with Hematoxylin and Eosin (H&E) and Giemsa stains. The slides were examined carefully,

and notes were made of all histopathological parameters. The cases were reported using the Updated Sydney System [6].

The data were entered using Microsoft Excel version 10.0, and the analysis was performed using IBM SPSS Statistics version 17.0. A point estimate was calculated, along with a 95% confidence interval.

RESULTS

Out of 385 patients, 80 (20.78%) were found to have abnormalities on histopathological assessment (19.14-22.42, 95% CI). Patients' ages ranged from 21 to 87, with a mean age of 69.90 years and a standard deviation of 15.32. Among those with abnormalities, 55 (68.75%) were male and 25 (31.25%) were female. All 80 patients (100%) experienced dyspepsia, 26 (32.50%) had weight loss, and 17 (21.25%) had anorexia. Upper gastrointestinal bleeding was most common in males (n=4, 66.67%) and patients aged 51–60 (n=3, 50.0%). All clinical presentations were observed in patients aged 81–90 years (n=8, 80.0%).

Among the patients who had undergone histopathological assessments, 40 (50.0%) were diagnosed with chronic gastritis, 23 (28.75%) with low-grade dysplasia, 15 (18.75%) with adenocarcinoma, and 2 (2.50%) with high-grade dysplasia. The main clinical complaint was dyspepsia for all patients with any histopathological diagnosis. Weight loss was noticed by 8 (30.77%) patients with low-grade dysplasia and 14 (53.85%) patients with adenocarcinoma. Abdominal pain, anorexia or upper gastrointestinal bleeding were not clinical complaints in patients with high-grade dysplasia (Table 2).

On endoscopic findings, 29 (36.25%) were ulcers, 24 (30.0%) cases of erythema, and 13 (16.25%) cases of atrophy. Erythema was most frequently seen in patients diagnosed with chronic gastritis (79.17%), while atrophy (46.15%) and growth (100%) were noted in patients with low-grade dysplasia and adenocarcinoma, respectively. Each patient with high-grade dysplasia had an ulcer (3.45%) and atrophy (7.69%) on endoscopy (Table 2).

Table 1: Patients' demographics based on clinical presentations

Demographics		Clinical presentations				
		Dyspepsia (n=80)	Weight loss (n=26)	Anorexia (n=17)	UGI* Bleeding (n=6)	Abdominal pain (n=10)
Gender	Male	55 (68.75)	20 (76.92)	13 (76.47)	4 (66.67)	8 (80.0)
	Female	25 (31.25)	6 (23.08)	4 (23.53)	2 (33.34)	2 (20.0)
Age groups (years)	21-30	1 (1.25)	0 (0)	0 (0)	0 (0)	0 (0)
	31-40	8 (10.0)	1 (3.85)	1 (5.88)	0 (0)	0 (0)
	41-50	11 (13.75)	1 (3.85)	0 (0)	2 (33.34)	1 (10.0)
	51-60	16 (20.0)	7 (26.92)	3 (17.65)	3 (50.0)	0 (0)
	61-70	19 (23.75)	4 (15.38)	4 (23.53)	0 (0)	5 (50.0)
	71-80	17 (21.25)	12 (46.15)	8 (47.06)	0 (0)	2 (20.0)
	81-90	8 (10.0)	1 (3.85)	1 (5.88)	1 (16.67)	2 (20.0)

(UGI*=upper gastrointestinal tract)

Table 2: Histopathological diagnoses based on clinical presentations, endoscopic findings, and provisional endoscopic diagnosis

Histopathological diagnoses	Clinical presentations				
	Dyspepsia (n=80)	**Weight loss (n=26)**	**Anorexia (n=17)**	**Abdominal pain (n=10)**	**UGI* bleeding (n=6)**
Chronic gastritis (n=40)	40 (50.0)	3 (11.54)	4 (23.53)	5 (50.0)	4 (66.67)
Low grade dysplasia (n=23)	23 (28.75)	8 (30.77)	4 (23.53)	3 (30.0)	0 (0)
Adenocarcinoma (n=15)	15 (18.75)	14 (53.85)	9 (52.94)	2 (20.0)	2 (33.33)
High grade dysplasia (n=2)	2 (2.50)	1 (3.85)	0 (0)	0 (0)	0 (0)
Histopathological diagnoses	**Endoscopic Findings**				
	Ulcer (n=29)	**Erythema (n=24)**	**Atrophy (n=13)**	**Growth (n=10)**	
Chronic gastritis (n=40)	11 (37.93)	19 (79.17)	4 (30.77)	0 (0)	
Low grade dysplasia (n=23)	9 (31.03)	5 (20.83)	6 (46.15)	0 (0)	-
Adenocarcinoma (n=15)	8 (27.59)	0 (0)	2 (15.38)	10 (100)	
High grade dysplasia (n=2)	1 (3.45)	0 (0)	1 (7.69)	0 (0)	
Histopathological diagnoses	**Provisional Endoscopic Diagnosis**				
	Malignancy (n=32)	**Gastritis (n=28)**	**Benign gastric ulcer (n=20)**		
Chronic gastritis (n=40)	9 (28.13)	20 (71.43)	11 (55.0)	-	-
Low grade dysplasia (n=23)	10 (31.25)	7 (25.0)	6 (30.0)		
Adenocarcinoma (n=15)	12 (37.50)	1 (3.57)	2 (10.0)		
High grade dysplasia (n=2)	1 (3.13)	0 (0)	1 (5.0)		

UGI*=upper gastrointestinal tract

DISCUSSION

The study results showed that histopathological abnormalities were in 20.78% of cases. Males were accounted twice as many assessments as females (68.75% vs. 31.25%). Most assessments were made in patients aged 61–70 years (23.75%), followed by those aged 71–80 years (21.25%) and 51–60 years (20.0%). A study in Nepal and several Southeast Asian countries reported similarity, a male-to-female ratio of 1.2 to 1, with the most common age group being 61–70 years (20.93%-28.0%)[7-9]In contrast, a study done in Bangladesh had higher number in 51- 61 years age group [10] and also a study based on Pakistan had an equal sex-based prevalence of histopathological abnormalities and a lower mean age of 37.74 [11].

In this study, the most common clinical presentations were dyspepsia (100%), weight loss (32.50%), and anorexia (21.25%).

In most other studies, dyspepsia was also reported as the most common clinical presentation (33.33%–82.0%) [8,9,11]. However, the incidence of the second most common clinical complaints differed from our study. Loss of appetite was reported in 21.25% of our patients compared to 33.30% in other studies, [9] abdominal pain was seen in 12.5% of our patients versus 22.2%–72.0% in other studies, [8,11] and bloating was observed in 0% of our patients compared to 62.0% in other studies [11].

This study showed that the most common endoscopic findings were ulcers (36.25%), erythematous lesions (30.0%), and atrophy (16.25%). Likewise, another study reported erythematous findings (26.70%) as the predominant endoscopic observation, following ulcers (33.30%) [9].The most frequent provisional endoscopic diagnoses in this study were malignancy (40.0%), followed by gastritis (35.0%) and benign gastric ulcers (31.25%). In contrast, another study showed a higher incidence of hyperemia (66.0%) and lower incidences of ulcers (16.0%) and polypoidal growths (16.0%) [11].A similar study in Nepal reported a higher incidence of gastritis (58.10%) but a lower incidence of ulcers (11.63%) during endoscopic diagnosis [7]

Also the incidence of malignancy (8.30%) reported in another study was much lower than in our study [9].This study did not had any normal mucosa on endoscopy, whereas other studies had normal mucosa in 4.70% to 19.04% of cases [8-10].

In this study, most patients were diagnosed with chronic gastritis on histopathology (50.0%), followed by dysplasia (31.25%) and adenocarcinoma (18.75%). Other studies have also mentioned chronic gastritis as the most common histopathological diagnosis (88.0%–92.0%), followed by dysplasia (4.0%–9.30%) and adenocarcinoma (2.0%–5.0%) [9,11,12].In contrast, one study showed adenocarcinoma as the most common histopathological diagnosis (59.04%), followed by gastritis (36.19%) and intestinal metaplasia (2.85%) [10].

This study noted the highest incidence of ulcers (37.93%) and erythema (79.17%) in patients with chronic gastritis, while atrophy (46.15%) and growth (100.0%) were observed in patients with low-grade dysplasia and adenocarcinoma, respectively. Similar findings were noted in other studies, which also found a correlation between chronic gastritis and endoscopic erythema or mucosal breaks [8,13].In addition, another study showed a positive correlation between the presence of dysplasia or chronic gastritis and normal mucosa [9].

In this study, most patients diagnosed with gastritis (71.43%) and benign gastric ulcers (30.0%) on endoscopy were found to have chronic gastritis on histopathologic assessment. Most cases initially identified as malignancies (37.50%) were confirmed as adenocarcinomas on histopathology. Another study reported that 14.50% of endoscopically diagnosed gastritis cases were identified as adenocarcinoma on histopathology, 90% of normal-looking mucosa was found to be gastritis, and 50% of gastric ulcers were diagnosed as carcinomas [10].Some studies have shown a strong correlation between provisional endoscopic and histopathologicaldiagnosis, while others have reported a poor correlation [7-9].

This study has several limitations. First, the findings may have limited generalizability due to the small sample size. Second, the study did not include acute gastritis or its variants. Lastly, visual analogue scales could be subjective and may not accurately reflect

the histopathological appearance of the gastric mucosa.

CONCLUSION

Prevalence rates for histopathological assessments were more common in males and in patients aged 61-70 years. Clinically, the most prevalent symptom was dyspepsia, while endoscopic findings predominantly revealed ulcers. Although in provisional endoscopic diagnosis, malignancy was frequently noted, the most common diagnosis in histopathological evaluations was chronic gastritis.

ACKNOWLEDGEMENT

The author would like to acknowledge Mr. Ajaya Basnet of the Nepal Armed Police Force Hospital, Balambu, Kathmandu, Nepal, for his assistance with statistical analysis and manuscript preparation.

Conflict of interest: None declared

Funding: None

Author's Contribution: conceptualized, designed the research work, and reviewed the literature and finalized the manuscript-**RM.**

REFERENCES

1. Sepulveda AR, Patil M. Practical approach to the pathologic diagnosis of gastritis. Arch Pathol Lab Med 2008 Oct 1;132(10):1586–93

2. Turner JR. The gastrointestinal tract. In: Kumar V, Abbas AK, Aster JC, editors. Robbins and Cotran pathologic basis of disease. 8th ed. Philadelphia: Saunders; 2010. p. 822–5

3. Yeh LY, Raj M, Hassan S, Aziz SA, Othman NH, Mutum SS, et al. Chronic atrophic antral gastritis and risk of metaplasia and dysplasia in an area with low prevalence of Helicobacter pylori. Indian J Gastroenterol 2009 Mar;28:49–52

4. Rosai J. Rosai and Ackerman's surgical pathology. 10th ed. Vol I. Philadelphia: Elsevier Health Sciences; 2011. p. 615–72

5. Suvakovic Z, Bramble MG, Jones R, Wilson C, Idle N, Ryott J. Improving the detection rate of early gastric cancer requires more than open access gastroscopy: a five year study. Gut 1997 Sep 1;41(3):308–13

6. Dixon MF, Genta RM, Yardley JH, Correa P. Classification and grading of gastritis: the updated Sydney system. Am J Surg Pathol 1996 Oct 1;20(10):1161–81

7. Poudel A, Regmi S, Poudel S, Joshi P. Correlation between endoscopic and histopathological findings in gastric lesions. J Univ Coll Med Sci 2013;1(3):37–41

8. Pruthi S, Nirupama M, Chakraborti S. Evaluation of gastric biopsies in chronic gastritis: grading of inflammation by Visual Analogue Scale. Med J Dr DY Patil Univ 2014;7(4):463

9. Choudhury S, Laishram RS, Punyabati P, Moirangthem GS, Debnath K. Histopathological study of gastric mucosal biopsies in chronic gastritis patients with special correlation to Helicobacter pylori infection at RIMS Hospital. J Evid Based Med Healthc 2016;3(55):2829–35

10. Sultana A, Badruddoza SM, Rahman F. Correlation between endoscopic and histological findings in different gastroduodenal lesion and its association with Helicobacter pylori. Anwer Khan Mod Med Coll J 2011;2(2):6–10

11. Qamar S, Bukhari MH, Asrar A, Sarwar S, Niazi S. Evaluation of antral gastric biopsies: a study of 50 patients at Mayo Hospital. Ann King Edward Med Univ 2010;16(1):45–50

12. Matsuhisa T, Miki M, Yamada N, Sharma SK, Shrestha BM. Helicobacter pylori infection, glandular atrophy, intestinal metaplasia and topography of chronic active gastritis in the Nepalese and Japanese population: the age, gender and endoscopic diagnosis matched study. Kathmandu Univ Med J 2007;5(3):295–301

13. Hassan TM, Al-Najjar SI, Al-Zahrani IH, Alanazi FI, Alotibi MG. Helicobacter pylori chronic gastritis updated Sydney grading in relation to endoscopic findings and H. pylori IgG antibody: diagnostic methods. J Microsc Ultrastruct 2016;4(4):167–74