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# The Distribution and Histopathological Patterns of Gastrointestinal Tract Endoscopic Biopsies in Al Baha, Saudi Arabia

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## Abstract

Endoscopy together with endoscopic biopsy is not solely used for diagnosing the neoplastic and non-neoplastic lesion however additionally to start out an effective treatment, to monitor the course of the disease and its response to therapy and for early detection of complications.

**Aim of the study:** To determine the histopathological patterns of gastrointestinal tract endoscopic biopsies.

**Material and Method:** A retrospective histopathology-based study carried out at histopathology laboratory at King Fahad Hospital, Albaha, Saudi Arabia, from Jan 2018 to December 2019. Medical records and histopathology results of all patients referred to the endoscopy unit for gastrointestinal tract endoscopy was retrieved for demographic data and after tissue processing H&E stained slides were examined below microscope for histopathological findings.

**Inclusion Criteria:** All GIT endoscopic biopsy was taken from each sex and everyone ages and received throughout the specified period was included in the study.

**Results:** Out of 191 endoscopic biopsies studied 99 were from female patients and 92 were from male patients. An age range of 14 - 97 years was observed. There was a single (0.5%) case from the esophagus, 148 (79%) cases from the stomach. Nine biopsies (4.7%) were derived from the small intestine while biopsies of the colon were within the second rank of biopsies by (16%) comprises 30 cases. 167(87.4%) cases were non-neoplastic, 6 (3.1%) cases were benign neoplasms, three lesions were suspicious for malignancy (1.6%) whereas 15(7.9%) were malignant neoplasms. Histopathology revealed chronic gastritis in 148 cases (77.5%) as the major histopathological finding in all investigated biopsies, of that 100(67.5%) cases were *Helicobacter pylori*-positive, while colonic adenocarcinoma 12 cases (6.3%) comprised the most frequently diagnosed malignant lesion.

**Conclusion:** A wide spectrum of neoplastic and inflammatory lesions was reported in the present study. Chronic gastritis (77.5%) is the major non neoplastic histopathological finding in all investigated biopsies and the majority of that was *Helicobacter pylori*-positive, while colonic adenocarcinoma (6.3%) comprised the most frequently diagnosed malignant lesion.

**Keywords:** Endoscopy, Gastrointestinal, Histopathology, Biopsy, KSA

## Introduction

The gastrointestinal flexible fiberoptic endoscope was first employed in 1968 and established to be a significant breakthrough in the diagnosis of the esophageal and gastro-duodenal lesions.

- It is a simple safe and well - tolerated procedure with direct visualization of the pathologic site, from which an endoscopic biopsy can be taken.
- Endoscopic biopsies are not only used to diagnose malignant and inflammatory lesions but also for monitoring the course, the extent of the disease, response of the therapy, and early detection of complications.
- There are a few published data concerning histopathological diagnosis on gastrointestinal endoscopic biopsy in Kingdom of Saudi Arabia. The availability of such information is not solely can provide a sensible estimation of the various spectrums of gastrointestinal diseases however additionally the information is used for comparison with other studies touching the same issue.

## Material and Methods

This is a 2-year (January 01, 2018, to December 31, 2019) retrospective, descriptive study of GI tract endoscopic lesions reported in the department of surgical pathology of King Fahad Hospital at Albaha.

A total of 191 biopsies were studied and relevant demographic and histopathological data were extracted from the gastroenterology and surgical pathology departments' registers and original request forms of patients.

All obtainable formalin-fixed and paraffin-embedded tissue blocks were sectioned at 3–5 µm and stained with hematoxylin and eosin and Giemsa stain that were used for lesions that required special stain. The pathological reports and diagnoses of all cases studied were reviewed.

Inclusion Criteria were all GIT endoscopic biopsies were taken from each sex and all ages and received throughout the specified period were included in the study.

Descriptive data generated by the study are presented as means ± the standard deviation for continuous variables and percentages for

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categorical variables. Chi-square ( $X^2$ ) test and Fishers exact test were done to test for the differences between categorical data. All statistics were done using SPSS (The Statistical Package for Social Sciences) version 21.0 software. Statistical significance was set at  $p$ -value < 0.05.

## Aim of the Study

Our study aimed to determine the histopathological patterns of the gastrointestinal tract endoscopic biopsies and to study the age and sex distribution of the predominant gastrointestinal tract lesions.

## Ethical Consideration

Faculty of Medicine Scientific Research and Ethics Committee ethical clearance.

## Results

This study involved 191 gastrointestinal endoscopic biopsies were taken from patients attending King Fahad hospital in Albaha city between 2018 and 2019. Biopsies were collected from patients aged

between 14 and 97 years old; their mean age was  $44.8 \pm 19.2$  years, that aged between 20 to 60 years were accounted for 69.1% and also the majority were females and represented 52%. 84% of collected biopsies were taken through upper endoscopy and approximately two-thirds were investigated in 2018 (Table 1).

Study shows that the studied gastrointestinal endoscopic biopsies are from the following organs: esophagus, stomach, small intestine, and colon (Table 2). There is a single case of esophageal carcinoma (0.5%). Endoscopic biopsies examined from the stomach represent 148 (79%). Chronic gastritis is the major histopathological finding in all investigated biopsies (77.5%). Fundal gland polyp, gastric adenocarcinoma, and gastric lymphoma are detected separately in three cases. Nine biopsies (4.7%) are derived from the small intestine: duodenitis is diagnosed in 4 cases and ileitis in equal cases and a single case of Crohns diseases. Biopsies of the colon are in the second rank of biopsies by (16%). Colonic adenocarcinoma, non-specific colitis, adenomatous polyp, ulcerative colitis, suspicious for malignancy and a solitary case of inflammatory polyp are 6.3%, 3.2%, 2.6%, 1.6%, 1.6% and 0.5% respectively.

General characteristics	The studied gastrointestinal endoscopic biopsies No = 191	
	Number	Percentage
<b>Age categories</b>		
< 20 years	17	8.9%
20 – 39 years	67	35.1%
40 -59 years	65	34%
> 60 years	42	22%
<b>Gender</b>		
Male	92	48%
Female	99	52%
<b>Year of endoscopy</b>		
2018	129	67.5%
2019	62	32.5%
<b>Type of endoscopy</b>		
Upper	161	84%
Lower	30	16%

**Table 1:** General characteristics of the studied gastrointestinal endoscopic biopsies.

Histopathological characteristics	The studied gastrointestinal endoscopic biopsies No=191	
	Number	Percentage
Esophagus		
Esophageal carcinoma	1	0.5%
Stomach		
Chronic gastritis	148	77.5%
Fundal gland polyp	1	0.5%
Gastric adenocarcinoma	1	0.5%
Gastric lymphoma	1	0.5%
Small intestine		
Doudenitis	4	2.1%
Ileitis	4	2.1%
Crohns disease	1	0.5%
Colon		
Nonspecific colitis	6	3.2%
Ulcerative colitis	3	1.6%
Inflammatory polyp	1	0.5%
Adenomatous polyp	5	2.6%
Suspicious for malignancy	3	1.6%
Colonic adenocarcinoma	12	6.3%

**Table 2:** Histopathological diagnosis of the studied gastrointestinal endoscopic biopsies.

The histopathology revealed non-neoplastic lesions 167 (87.4%), benign lesions 6 (3.1%), three lesions suspicious for malignancy (1.6%) and 15 (7.9%) lesions of malignancy (Figure 1).

Regarding sex distribution, our study revealed that, there was no significant difference between males and females regarding all histopathological findings in the studied chronic endoscopic biopsies (p-value>0.05), except for colonic adenocarcinoma where occurred 5 times more in males in comparison to females (p-value<0.05) (Table 3).

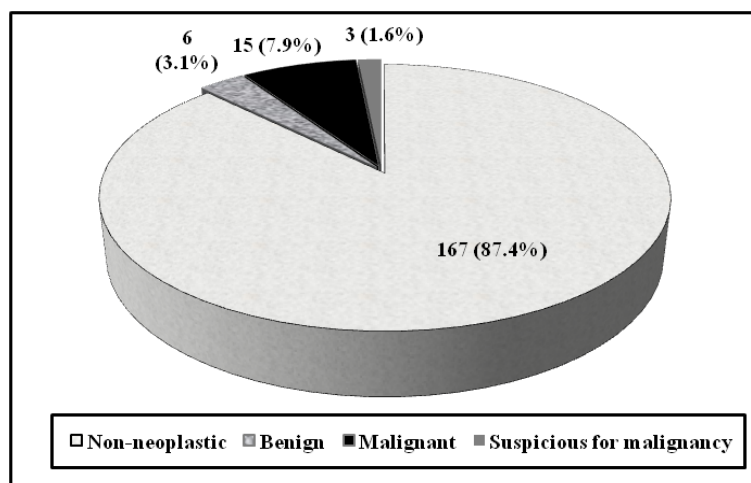
It was demonstrated that chronic quiescent gastritis and chronic mild active gastritis are more prevalent among females while chronic moderate active gastritis is highly recorded in males (Table 4). These differences between the gender and the studied chronic gastritis endoscopic biopsies are highly significant (p-value<0.01). Chronic quiescent gastritis and chronic moderate active gastritis is more common among patients aged between 40-59 years, while chronic mild active gastritis and chronic severe active gastritis is more observed

among patients aged between 20-39 years and these differences were insignificant (p-value>0.05).

The metaplasia is detected only in 6 biopsies divided equally in chronic quiescent gastritis, chronic mild gastritis and chronic moderate active gastritis (6.7%, 5.1% and 3.5% respectively), with complete absence in chronic severe active gastritis.

It was demonstrated that a highly significant positive relationship between the increases in the severity of the type of chronic gastritis and the presence of *Helicobacter pylori* infection in the studied chronic gastritis endoscopic biopsies (p-value<0.01) (Figure 2).

The limitations of this study are represented by the fact that it's a single-hospital based study which may not be representative of the magnitude of gastrointestinal diseases of the whole population in the region studied. Moreover, we only used the histopathological assessment of *H. pylori* status as compared to a combination of two or more methods to improve the accuracy of *H. pylori* detection (Figures 3-6).



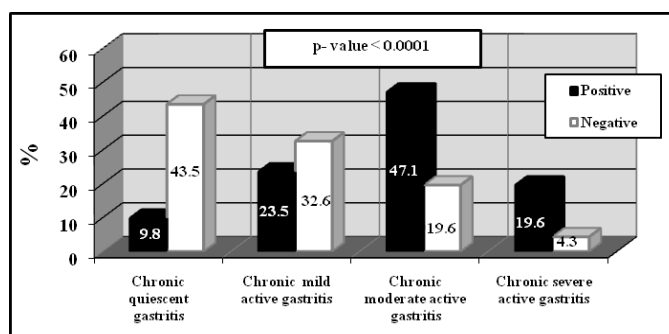
**Figure 1:** The histopathology of the studied gastrointestinal endoscopic biopsies.

Histopathological findings	The studied endoscopic biopsies number = 191		p-value
	Number of Male Members=92	Number of Female Members=99	
	Number (%)	Number (%)	
Esophageal carcinoma	1 (1.1%)	0 (0%)	>0.05
Chronic quiescent gastritis	11 (12%)	19 (19.2%)	>0.05
Chronic active gastritis	57 (62%)	61 (61.6%)	>0.05
Fundal gland polyp	0 (0%)	1 (1%)	>0.05
Gastric adenocarcinoma	1 (1.1%)	0 (0%)	>0.05
Gastric lymphoma	1 (1.1%)	0 (0%)	>0.05
Doudenitis	2 (2.2%)	2 (2%)	NA
Ileitis	1 (1.1%)	3 (3%)	>0.05
Crohns disease	0 (0%)	1 (1%)	>0.05
Nonspecific colitis	4 (4.3%)	2 (2%)	>0.05
Ulcerative colitis	1 (1.1%)	2 (2%)	>0.05
Inflammatory polyp	0 (0%)	1 (1%)	>0.05
Adenomatous polyp	1 (1.1%)	4 (4%)	>0.05
Suspicious for malignancy	2 (2.2%)	1 (1%)	>0.05
Colonic adenocarcinoma	10 (10.9%)	2 (2%)	0.015*

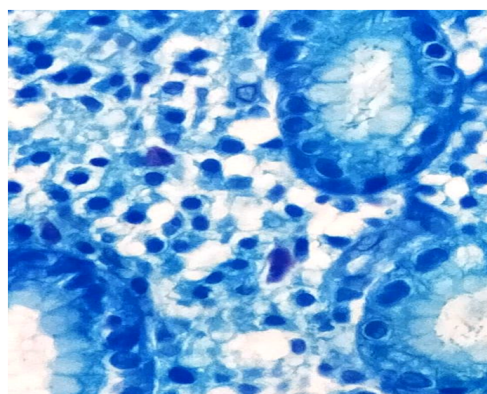
**Table 3:** Gender distribution of histopathological findings in the studied chronic endoscopic biopsies.

General characteristics	The studied chronic gastritis endoscopic biopsies No = 148				p-value
	Chronic quiescent gastritis No=30	Chronic mild active gastritis No=39	Chronic moderate active gastritis No=57	Chronic severe active gastritis No=22	
	Number (%)	Number (%)	Number (%)	Number (%)	
Age categories					
< 20 years	5 (16.7%)	3 (7.7%)	6 (10.5%)	2 (9.1%)	<0.05
20 – 39 years	8 (26.7%)	18 (46.2%)	15 (26.3%)	11 (50%)	
40 -59 years	10 (33.3%)	12 (30.7%)	22 (38.6%)	7 (31.8%)	
> 60 years	7 (23.3%)	6 (15.4%)	14 (24.6%)	2 (9.1%)	
Gender					
Male	11 (36.7%)	11 (28.2%)	35 (61.4%)	11 (50%)	0.009*

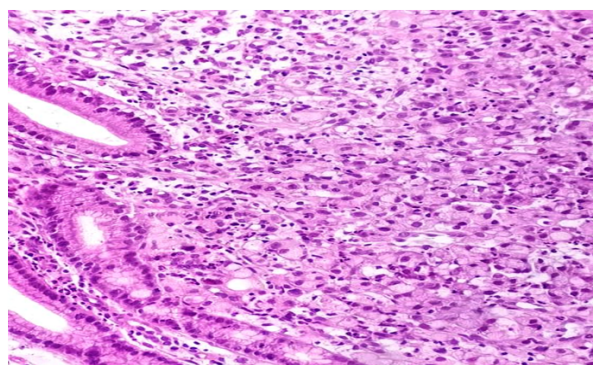
**Table 4:** The relationship between chronic gastritis and socio-demographic factors in the studied chronic gastritis endoscopic biopsies.



**Figure 2:** The relationship between the type of chronic gastritis and *Helicobacter pylori* infection in the studied chronic gastritis endoscopic biopsies. Chi square test, Significant difference (p value <0.05).

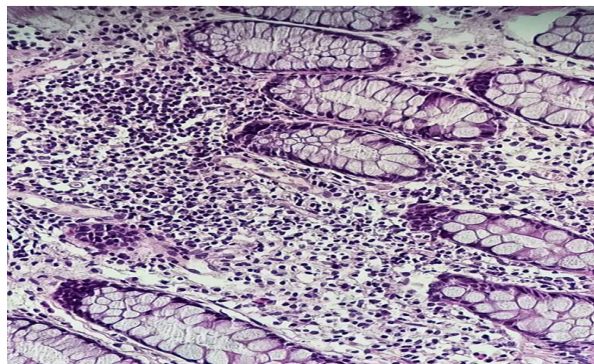


**Figure 3:** Chronic *H. pylori* associated gastritis: gastric glands showed rod shaped *H. pylori* attached to luminal surface (Giemsa stain 100X).

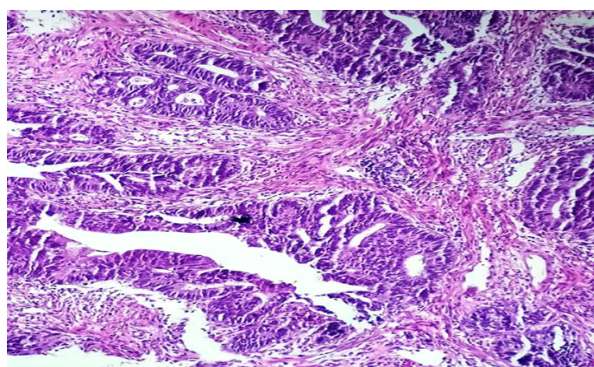


**Figure 4:** Diffuse type gastric adenocarcinoma - (H&E stain 40X) view showed signet ring cell appearance of the malignant infiltrate.





**Figure 5:** Nonspecific chronic colitis (H&E stain 40X).



**Figure 6:** Moderately differentiated colorectal adenocarcinoma (H&E stain 40X).

## Discussion

This study was conducted in the department of surgery, gastroenterology and histopathology at King Fahad Hospital in Albaha from January 2018 to December 2019 to evaluate the histopathological patterns of gastrointestinal endoscopic biopsies. The study involved 191 cases, of which 151(79%) cases from the stomach, 30(16%) from the colon, 9(4.7%) from the small intestine, and single case (0.5%) from the esophagus. This pattern particularly for upper gastrointestinal tract biopsies, was almost like the studies conducted by several researchers [1-6].

In our study, among 191 gastrointestinal endoscopic biopsies, there is a slight female predominance (52%) which was similar to Memon F et al finding and in distinction to the previous report exhibiting a male predominance [3]. The gender predominance favoring females might be attributed to the improvement in awareness and availability of health care facilities within the area of study.

When considering the ages of the cases studied, patients with gastrointestinal lesions presented between ages ranging from 14 – 97 yrs. The mean age of the patients was 44.8 yrs., whereas the highest age incidence was seen between the 3<sup>rd</sup> and 6<sup>th</sup> decade (69.1%). The distribution of cases towards comparatively younger ages might be attributed to the predominance of non-neoplastic lesions diagnosed.

In the present study and among all biopsies received there was only one biopsy was taken from the esophagus and its histology showed features of adenocarcinoma. In contrast, the bulk (79%) of the biopsies in this study was carried out from the stomach. Of the 151 cases, 148

were non-neoplastic in form of chronic gastritis and only 3 cases were neoplastic. This trend of distribution was similar to studies conducted by several researchers [4,7-12]. Of the 148 cases of chronic gastritis 100 cases (67.5%) were *H. pylori*-associated which was similar to (61%) in research study in India [13] and in contrast to one - third of cases in other similar studies [5,12,14,15] and 42.6% of cases in Gang H et al study [2].

Our study also revealed a significant correlation between the severity of gastritis and the presence of *H. pylori*, as 66.7% of cases of moderate and severe gastritis are *H. pylori* associated when compared with 33.3% of the cases of mild and quiescent form of chronic gastritis in which the organism was found. This finding was also observed in other similar studies [3,12].

In our work and out of 148 gastric biopsies studied intestinal metaplasia was found in 4% 6 cases, a result that was in keeping with study in Nepal [6], lower than 5.8% in Gang H et al study in India [2] and higher when compared to 2.7% in study in western Saudi Arabia [12].

Regarding the neoplastic lesions of the stomach fundal gland polyp, gastric adenocarcinoma and gastric lymphoma were detected on an individual basis in three cases of gastric biopsies.

Biopsies of the colon were within the second rank of biopsies by (16%) comprises 30 cases. Malignant neoplastic lesions constituted 6.3% (12) cases, (non-IBD) inflammatory lesions 3.2% (6) cases, benign neoplastic lesions 2.6% (5) cases, inflammatory polyps 0.5% one case, inflammatory bowel diseases (IBDs) 1.6% (3) cases, and suspicious

lesions for malignancy 1.6% (3)cases. According to the distribution of lower gastrointestinal biopsies, it's obvious currently to conclude that the malignant lesions were the predominant lesions encountered that were in concordance with the studies done in Ibadan [15-17], in Nigeria [18] and in Pakistan [19] reported that malignant lesions being the most frequently diagnosed lesion on lower GI endoscopy.

Colonic cancer wherever occurred 5 times more in males as compared to females. The male predominance is slightly beyond that was determined in Nigeria [18,20].

## Conclusion

A wide spectrum of neoplastic and inflammatory lesions was reported in the present study. Chronic gastritis is the major non-neoplastic histopathological finding in all investigated biopsies and the majority of cases were *Helicobacter pylori*-positive, whereas colonic adenocarcinoma comprised the most frequently diagnosed malignant lesion.

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