

## RESEARCH ARTICLE

# Histopathological Diagnosis of Peptic Ulcer Biopsies in Koya City, Kurdistan Region, Iraq

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## ABSTRACT

Peptic ulcer disease is the common gastrointestinal disorder, which affects the high number of people during their life. The present study was carried out among 267 patients with different upper gastrointestinal symptoms, at the Department of Endoscopy, Shahid Dr.Khalid Hospital/in Koya city during 1/2018-1/2019, all patients were assessed endoscopically and biopsies from both antral and body mucosa were taken for histopathological examination. The aim of this study was to determine the spectrum of histopathological biopsies of the gastric region with the distribution of peptic ulcer biopsies according to age and sex in Koya city, Kurdistan Region, Iraq. The study showed normal gastric mucosa histopathologically in 22 (8.24%) cases and 245 (91.76%) abnormal gastric mucosa histopathologically. Gastritis histopathologically was seen in 217 (81.27%) of cases, chronic gastritis represented the highest relative frequency in this histopathologically diagnosed patients, where it was seen in 65.89% of the cases and acute gastritis was detected in 34.10% of the cases. *Helicobacter pylori* was detected in 82.77% of patients. A significant association was detected between chronic gastritis and *H. pylori* infection.

**Keywords:** Biopsy; Endoscopy; Gastritis; *Helicobacter pylori*; Histopathological examination; Peptic ulcer

## INTRODUCTION

Peptic ulcer disease is common throughout the world and its relationship with *Helicobacter pylori* was long before established. A peptic ulcer is a sore or inflammation on the lining of the stomach or duodenum of the digestive system (Ganapathy and Suryadevara, 2016). Histopathological study of biopsy specimens is used to confirm the endoscopic diagnosis in suspected malignancy or to rule out in the endoscopically benign appearing lesions and also is performed for monitoring the course, determining the extent of disease as responses to therapy and for the early detection of complications (Sharma et al., 2015).

The human gastrointestinal tract which is long and tortuous is an important site for a wide variety of lesions, which includes congenital, inflammatory, and neoplastic conditions (Dacosta et al., 2002). Gastric disorders are one of the most commonly encountered problems in clinical practice. A variety of disorders can affect the stomach and gastrointestinal tract. The definitive diagnosis of gastric disorders rests on the histopathological confirmation, to facilitate the diagnosis of different lesions, endoscopic and histology are complementary (Pailoor et al., 2013) (Versalovic, 2003). There are several etiological types of

gastritis, their different etiology being related to different clinical manifestations and pathological features (Al-Nuaimya and Faisal, 2019) (Poudel et al., 2013). Most of the patients have both gastric and duodenal ulcers at the same time and they have higher incidences to develop peptic ulcers more than once in their lifetime (U.S. Department of Health and Human Services, 2010). Sometimes, a peptic ulcer may develop above the stomach in the esophagus, but the occurrence of peptic ulcers in this region is less common in patients (Ramakrishnan and Salinas, 2007).

The primary cause of peptic ulcers is *H. pylori* a bacterium and is the second most common pathogen which affects the population of gastric related diseases (Calvino and Parra, 2010). *H. pylori* is a spiral shaped, basophilic, and Gram-negative bacillus that resides exclusively in the gastric mucosa (Yakoob and Hussainy, 2010). *H. pylori* has been established as a major etiological factor in the pathogenesis of chronic gastritis and gastric atrophy (Hassan et al., 2016). To arrive at the diagnosis of different lesions, endoscopic and histopathology are complementary (Versalovic, 2003). The aim of this study was to determine the spectrum of histopathological biopsies of the gastric region with the distribution of peptic ulcer biopsies according to age and sex in Koya city, Kurdistan Region, Iraq.

## MATERIALS AND METHODS

The present study was carried out among 267 patients with endoscopic biopsies and histopathological assessment, at the Department of Endoscopy, Shahid Dr.Khalid Hospital/in Koya city during 1/2018-1/2019. A total of 267 gastric biopsies were studied for 12 months from January 2018 to January 2019. Of these 267 cases, 158 were male and 109 were female.

Endoscopies were done in all the clinically diagnosed patients with peptic ulcer, biopsies from both antral and body mucosa were taken for histopathological examination. Specimens were processed and endoscopic biopsies placed into a labeled bottle containing 10% neutral formalin, were received in the Department of Surgery, Shahid Dr.Khalid Hospital. General examination for samples according to the general technique was done and then documented. Tissue processing of samples was done using an automatic tissue processor. Specimens were processed and embedded in the paraffin wax and were cut into sections of 5 µm in thickness, all the slides were stained with hematoxylin and eosin, and Giemsa stain is used where it was needed.

The clinical and pathological data of the studied patients were reviewed and entered into a computerized database. The statistical analysis included (%) and Chi-square test.  $P \leq 0.05$  was considered statistically significant.

## RESULTS

A total of 267 gastric biopsies were studied for 12 months from January 2018 to January 2019. Out of these 267 cases, 158 (59.17%) were male and 109 (40.83%) were female, the majority of cases were of male gender. The age range of patients was from 22 years to 86 years with a mean age of 54 years. The highest incidence was seen in 41–50 years old patients or fourth decade, while the lowest incidence was seen in the seventh and second decades. The age and sex distribution of the study is shown in Table 1.

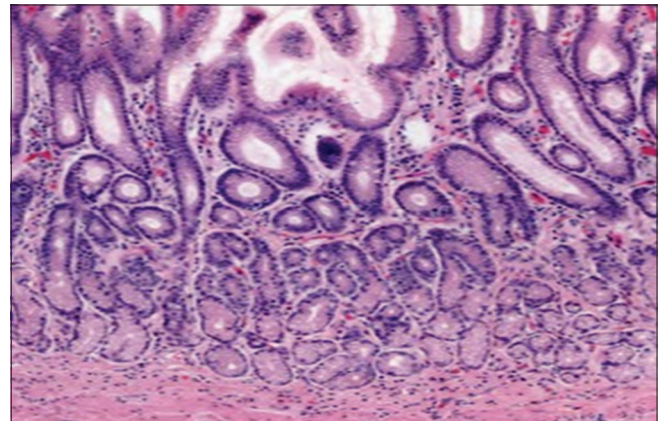
The endoscopic examination showed normal gastric mucosa in 90 (33.70%) patients out of a total of 267 patients. The histopathological findings of these 90 patients showed 22 (8.24%) normal gastric mucosa Figure 1, while 38 (14.23%) males and 30 (11.24%) females showed abnormal gastric mucosa, among them 19 (7.11%) males and 12 (4.49%) females showed antral gastritis, 13 (4.87%) males and 10 (5.99%) females showed body gastritis, and 6 (2.25%) males and 8 (3%) females showed both antral and body gastritis. The remaining 177 (66.30%) patients revealed abnormal gastric mucosa (gastritis) endoscopically. On histopathological examination, 106 (39.70%) males and

71 (26.59%) females showed abnormal gastric mucosa, among them 59 (22.10%) males and 28 (10.49%) females showed antral gastritis, 28 (10.49%) males and 22 (8.24%) females showed body gastritis, and 19 (7.12%) males and 21 (7.87%) females showed both antral and body gastritis.

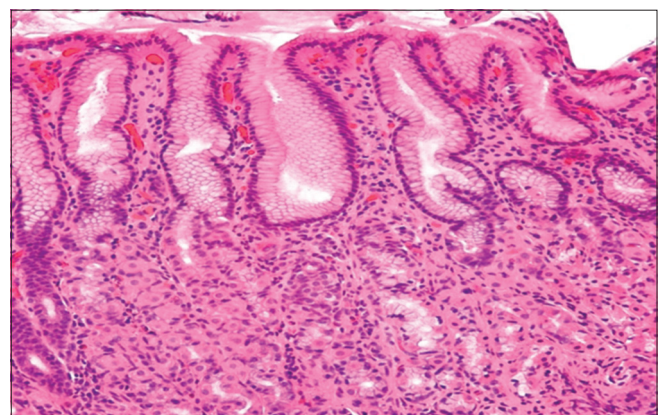
Among the 217 (81.27%) of a total of 267 patients with gastritis histopathologically, acute gastritis [Figure 2] was diagnosed in 74 (34.10%) patients, while chronic gastritis [Figure 3] was detected in 143 (65.89%) of the patients, sex distribution with their endoscopic and histopathological diagnosis is shown in Table 2.

**Table 1: Age and sex distribution of the study group**

Age group (years)	Sex of the patients		Total (%)
	Male	Female	
22–30	8	10	18 (6.74)
31–40	44	32	76 (28.46)
41–50	58	38	96 (35.95)
51–60	18	8	26 (9.74)
61–70	22	12	34 (12.73)
>71	8	9	17 (6.37)
Total	158	109	267 (100)



**Figure 1: Photomicrograph showing the normal gastric mucosa (H&E x400)**



**Figure 2: Photomicrograph showing superficial acute gastritis (antrum) (H&E x400)**



**Table 2: Sex distribution with their endoscopic and histopathological diagnosis**

Features	Description	Male (%)	Female (%)	Total (%)
Endoscopic findings	Normal gastric mucosa	52 (14.97)	38 (14.23)	90 (33.70)
Histopathological findings	Normal gastric mucosa	14 (5.24)	8 (3)	22 (8.24)
	Antral gastritis	19 (7.11)	12 (4.49)	31 (11.61)
	Body gastritis	13 (4.87)	10 (5.99)	23 (8.61)
	Antral and body gastritis	6 (2.25)	8 (3)	14 (5.24)
	Abnormal gastric mucosa	106 (39.70)	71 (26.59)	177 (66.30)
Endoscopic findings	Abnormal gastric mucosa	106 (39.70)	71 (26.59)	177 (66.30)
Histopathological findings	Antral gastritis	59 (22.10)	28 (10.49)	87 (32.58)
	Body gastritis	28 (10.49)	22 (8.24)	50 (18.73)
	Antral and body gastritis	19 (7.12)	21 (7.87)	40 (14.98)
	Acute gastritis	34 (15.67)	30 (13.83)	74 (34.10)
Histopathological findings	Chronic gastritis	96 (44.24)	47 (17.60)	143 (65.89)

**Table 3: The frequency of *H. pylori* according to the severity of gastritis**

Grade	<i>H. pylori</i> +ve	
	No.	%
Normal gastric biopsy	87	(39.36)
Acute gastritis	47	(21.27)
Chronic gastritis	87	(39.36)
Total	221	(100)

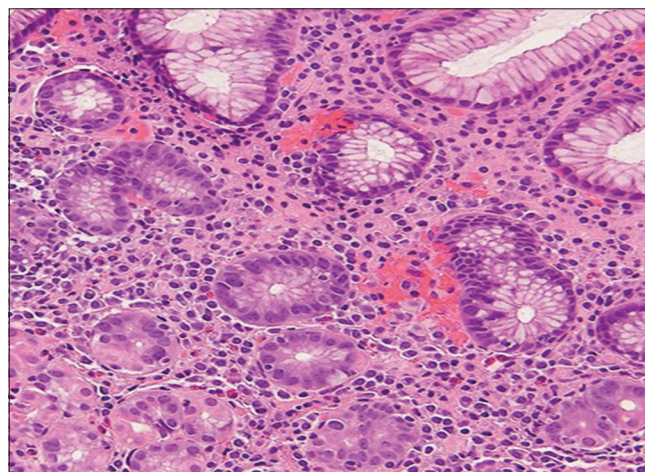
*H. pylori*: *Helicobacter pylori*

By the use of a modified Giemsa stain, *H. pylori* was detected in 221 (82.77%) of the patients. *H. pylori* was detected in 87 (29.21%) patients with normal gastric biopsy, in 47 (17.60%) patients with acute gastritis, and in 87 (29.21%) patients with chronic gastritis, the frequency of *H. pylori* according to the acute and chronic gastritis is shown in Table 3.

No statistically significant relation found between normal findings with histopathological assessments of each antral ( $P = 0.07$ ), body ( $P = 0.06$ ), and both antral and body gastritis ( $P = 0.06$ ), respectively, while a statistically significant relation found between abnormal gastric findings with histopathological assessments of each antral ( $P = 0.05$ ), body ( $P = 0.05$ ), and both antral and body gastritis, ( $P = 0.05$ ), respectively, there was a very strong association between chronic gastritis and *H. pylori* ( $P = 0.00$ ). The intercorrelation among various histopathological parameters with each other is shown in Table 4.

## DISCUSSION

The study was conducted from January 2018 to January 2019, comprised 267 patients with endoscopic biopsies and histopathological assessment. Of these 267 patients, 158 (59.17%) were males and 109 (40.83%) were females, as shown in Table 1. In our study, the majority of cases were of the male gender, this is similar to the results of Sharma et al., 2015 and Jeshtadi et al., 2016. This could probably due to a large number of male genders attending

**Figure 3: Photomicrograph showing chronic gastritis (body) (H&E x400)**

to the hospital compared to the female patients or females may be asymptomatic and may not come under medical attention. According to Sharma et al., 2015, this gender ratio favoring males could be reflecting of the fact that males are exposed to more risk factors than females, while Sultana et al., 2011 explained the reason for it by higher gastric acid level in male.

Gastritis, perhaps best defined as the inflammatory response of the gastric mucosa to injury, is an extremely common condition worldwide (Garg et al., 2012). The term gastritis has a broad histopathological and topographical spectrum that leads to different concepts of what gastritis is Al-Nuaimya and Faisal, 2019. The biopsy sampling of the gastric ulcer at diagnostic endoscopy provides useful information which helps in the diagnosis of various lesions (Sharma et al., 2015).

A study from Turkey showed that 94% of the patients who were diagnosed as having a normal upper gastrointestinal endoscopy were found to have gastritis after the histopathological diagnosis (Kasap et al., 2012), this is similar to the results of the present study, which

**Table 4: Intercorrelation among various histopathological parameters with each other**

Parameters	Normal gastric mucosa	Antral gastritis	Body gastritis	Antral and body gastritis	Acute gastritis	Chronic gastritis	<i>H. pylori</i>
Normal gastric mucosa	-	0.07	0.06	0.06	0.06	0.06	0.05
Antral gastritis	0.04	-	0.00	0.00	0.05	0.05	0.05
Body gastritis	0.03	0.00	-	0.00	0.03	0.5	0.04
Antral and body gastritis	0.05	0.00	0.00	-	0.05	0.05	0.04
Acute gastritis	0.05	0.02	0.02	0.02	-	0.05	0.03
Chronic gastritis	0.05	0.02	0.03	0.02	0.00	-	0.00
<i>H. pylori</i>	0.05	0.05	0.05	0.05	0.02	0.00	-

The association between the histopathological parameters was assessed by means of Chi-square test.  $P=0.05$  was considered statistically significant. \* $P\leq 0.05$  is statistically significant. \* $P=0.00$  is highly significant. \* $P>0.05$  is not statistically significant. *H. pylori*: *Helicobacter pylori*

90 (33.70%) of the subjects were endoscopically normal, but only 22 (8.24%) out of these 90 cases were found to be histopathologically normal, the remaining 31 (11.61%), 23 (8.61%), and 14 (5.24%) showed antral gastritis, body gastritis, and both antral and body gastritis, respectively, as shown in Table 2, these results are similar to that of Al-Nuaimya and Faisal, 2019 and Kaur and Raj, 2002 who showed that patients with a normal endoscopy were not necessarily histologically normal. There were 177 (66.30%) patients with endoscopic abnormal gastric mucosa (gastritis). Their histopathological examination showed that 87 (32.58%) had antral gastritis, 50 (18.73%) showed body gastritis, and 40 (14.98%) showed both antral and body gastritis. Among 217 (81.27%) of the total 267 patients with gastritis histopathologically, acute gastritis was diagnosed in 74 (34.10%) patients and chronic gastritis was detected in 143 (65.89%) of the patients, these results are similar to Al-Nuaimya and Faisal, 2019, also with results of Ibis et al., 2009, who demonstrated that 85% of the subjects who were said to have gastritis endoscopically were found to have gastritis pathologically.

Peptic ulcer disease has shown a very high prevalence in Bangladesh and is important among the major chronic problems encountered by the physicians and surgeons (Nessa et al., 2001). In a developing country like Bangladesh, overcrowding, bad sanitation, and unhealthy practice favor the high prevalence of *H. pylori* in the population (Sultana et al., 2011).

The association of *H. pylori* with gastritis, duodenal ulcer, and gastric cancer has been reported by investigators from different countries all over the world (Akanda, 2006). According to Watari et al., 2014, there is a clear association between *H. pylori* infection and the development of peptic ulcer disease. In the present study, *H. pylori* was detected in 221 (82.77%) of the patients, 87 (29.21%) with normal gastric biopsy, 47 (17.60%) patients with acute gastritis, and 87 (29.21%) chronic gastritis, showing that the majority of the patients were developed chronic gastritis, these results were in agreement with that of Al-Nuaimya and Faisal, 2019, and Yakoob and Hussainy, 2010, which in

their study revealed a significant association between *H. pylori* infection and activity of chronic gastritis, also in agreement with Watari et al., 2014, who pointed that the majority of patients infected with *H. pylori* develop acute gastritis which may spontaneously resolve. The ability of *H. pylori* to cause acute gastritis is best demonstrated from studies where healthy volunteers have been intentionally infected with the organism.

## CONCLUSION

We concluded that the majority of cases were of the male gender, the highest incidence was seen in the fourth decade, while the lowest incidence was seen in the seventh and second decades. Chronic gastritis represented the highest relative frequency in the histopathologically diagnosed gastritis, where it was seen in 65.89% of the cases and acute gastritis was detected in 34.10% of the cases. *H. pylori* was detected in 82.77% of cases. A significant association was detected between chronic gastritis and *H. pylori* infection. Endoscopic and histopathological examinations of suspected gastric biopsies should go parallel and should be a substitute of each other.

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## ملخص البحث:

مرض القرحة الهضمية هو اضطراب شائع في الأمعاء والتي تؤثر على عدد كبير من الناس خلال حياتهم. قد أجريت الدراسة الحالية بين 267 مرضى الذين يعانون من أعراض مختلفة في الجزء العلوي من الجهاز الهضمي، في القسم التنظير/مستشفى شهيد دكتور خالد بمدينة كويه خلال فترة 1/2018-1/2019، تم تقييم جميع المرضى بالتنظير الباطني وأخذت الخزعات من المنطقة الجريبات والغشاء المخاطي لجسم المعدة للفحص النسيجي المرضي. كان الهدف من هذه الدراسة هو تحديد مدى الخزعات النسيجية للمعدة مع توزيع خزعة القرحة الهضمية وفقاً للعمر والجنس.

أظهرت الدراسة حالة طبيعية للغشاء المخاطي للمعدة في 22 (8.24%) من الحالات و 245 (91.76%) حالة غير طبيعية لغشاء المخاطي في المعدة، من خلال التشخيص النسيجي المرضي شوهد التهاب المعدة في 217 (81.27%) من الحالات، و التهاب المعدة المزمن يمثل أعلى نسبة في المرضى حيث لوحظ في 65.89% من الحالات وتم الكشف عن التهاب الحاد (histopathologically) الذين تم تشخيصهم بشكل التشخيص النسيجي المرضي في 82.77% من المرضى. وجد ارتباط معنوي كبير *Helicobacter pylori* للمعدة في 34.10% من الحالات. وأظهرت الدراسة تشخيص بكتريا *Helicobacter pylori* بين التهاب المزمن للمعدة و وجود بكتريا.

## پوخته

همرسه برین نهخوشیهکی بهر بلای کونندامی همرس و گهدهیه، بهشیوهمیهک ریژمیهمی زور له خهلمکی له ماوهی ژیانیان نووشی دهن. ئهم توژیژینهوهیه 267 نهخوشی له خوگرتوه که نیشانهی جیاوازیان ههبوو له بهشی سهرموهی کونندامی همرس و گهده له بهشی ههناو بیینی/ نهخوشخانهی شهید دکتور خالید له کویه له ماوهی 1/2018-1/2019، ههموو نهخوشهکان له ریگای ههناو بیینی پشکینیان بو کراو پارچهی شانه (توژیژال) له ناویژش و لهشی گهده وهرگیرا به مهبهستی پشکینی نهخوشی شانهیی. ئامانج لهو توژیژینهوهیه بو دیاری کردنی ئاستی نهخوشی له پارچه شانه وهرگیراوهکانی گهده بوو لهگهڵ بهر بلای همرسهریینی گهده بهیپی تهمهن و رهگهن.

به پیی توژیژینهوهیه و له کاتی پشکینی نهخوشی شانهیی 22 (8.24%) ی حالتهکان ناویژشی گهدهیان ئاسایی بوو و 245 (91.76%) ی حالتهکان نا ئاسایی بوو، ههرو کردنی گهده له 217 (81.27%) حالته بینرا دواي ئهجام دانی پشکینی شانهی نهخوشی، به شیوهیهک ههوکردنی گهدهی دریژخایهن زورترین ریژهی نیشان دا لهو نهخوشانهی که پشکینی شانهیی نهخوشیان بو کرا به ریژهی 65.89% له کاتیگدا ههرو کردنی گهدهی تووند له 82.77% ی نهخوشهکان دهست نیشان کرا *Helicobacter pylori* تهها له 34.10% ی نهخوشهکان بینرا. ههر به پیی توژیژینهوهیه که بهکتریای *Helicobacter pylori* و پهیوهندیهکی گهورهو بایهخدار بینرا له مابهینی ههوکردنی گهدهی دریژخایهن و بوونی بهکتریای.