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Risk Factors and Morbidity Pattern of Patients with Peptic Ulcer Undergoing Endoscopic Examination

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Abbreviations:
PU: peptic ulcer;
H. pylori: Helicobacter pylori;
NSAID: non-steroidal anti-inflammatory drugs.

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ABSTRACT

Background: the prevalence of peptic ulcer (PU) is declining in Western because of widespread use of Helicobacter pylori (H. pylori) eradication drugs, however, it still high in developing regions. The study aimed to explore certain aspects of cases with PU and to identify the predictors of PU related to risk factors.

Material and Methods: the study was conducted at the endoscopic unit at Al-Sadr Teaching Hospital. A cross-sectional study involving 152 cases who underwent endoscopic examination by specialist doctors. All patients were interviewed regarding personal bio-data, selected risk factors and detailed symptomatolgy of their conditions. These included age, sex, residency, marital status, education levels, job, symptoms, pattern of Use of NSAID, smoking, alcohol drinking, preference of food, chronic disease, stressful life and family history of peptic ulcer. Endoscopy [1. None 2. Gastritis 3. Peptic ulcer (gastric/Duodenal) 4. Others (specified)] and blood test for H. pylori using serum to detect Anti-bodies were done for each case.

Results: females were more presented (55.3%) compared to males (44.7%). Most cases were married (74.3%). The primary education level was the most frequent (32.9%). The use of NSAID was reported by 46 (30.3%). Active smokers represent 13.2%, ex-smokers 27.0 and passive smokers 11.8% thus the ever exposed to smoking represent 48.0%. Alcohol use was very infrequent reported by only 6 persons (3.9%) and spicy food was reported by 47 (30.9%). Regarding stressful life as perceived by patients was reported by 92 (60.5%) and family history was positive in 19.1%. The two most frequently reported symptoms were epigastric pain reported by 91.4% and burning sensation reported by 77.6%. About 25.7% of the cases with no gastric lesion of whatsoever. Gastritis alone or combined with others was found in 34(22.4%), PU in 30 (19.8%) and hiatus hernia in 32 (21.1%). Only vomiting could significantly predict the finding of PU. It is very clear that the infection rate was highest among patients with PU (63.0%) as compared to any other gastric lesion (46.4%) or to those with no lesions (29.0%). This variation in infection distribution was statistically significant ($P=0.035$).

Conclusions: most patient with gastric problems are middle age, female, married and housewives. The commonest clinical feature was epigastric pain and burning sensation. According to the endoscopic finding about one fourth of the patient have no gastric lesion while the main lesion was gastritis then hiatus hernia and peptic ulcer. There is a significant association

between peptic ulcer and H. pylori infection, male gender and stress. Burning sensation was strong predictor for H. pylori infection. Meanwhile male gender, non-spicy food and vomiting are predictors to have PU and H. pylori infection together.
Key words: peptic ulcer, H. pylori, epigastric pain, burning sensation, non-spicy food, gastric ulcer

INTRODUCTION

The prevalence of peptic ulcer (PU) is declining in Western because of widespread use of Helicobacter pylori (H. pylori) eradication drugs (1). Male to female ratio for duodenal ulcer varies from 5:1 to 2:1, while that for gastric ulcer is 2:1 or less (1,2). The advancement in endoscopic treatment of bleeding PU have led to fewer operations for this condition (2). Up to 90% of adult population are infected in some countries but the majority of patient remain healthy and asymptomatic and only a minority develop clinical disease (1). The high prevalence of H. pylori infection in developing regions contribute to the continuity of a relatively great risk of PU (3).

H. pylori, non-steroidal anti-inflammatory drugs (NSAID), gastrinoma, aging, family history, severe stress, alcohol drinking, and cigarette smoking are the important etiological factors (4). The risk of malignancy transformation in duodenal ulcer is so uncommon compared to gastric ulcer which is highly associated with malignancy transformation following benign chronic gastric ulcer (4,5).

The diagnosis of PU is based on careful assessment to confirm it and to exclude other differential diagnoses through a package of diagnostic tools by exclude other causes of epigastric pain like biliary colic, acute pancreatitis, ruptured aortic aneurysm and ischemic heart disease; Gastroduodenoscopy, Barium swallow and Barium meal; serology for H. pylori, urea breath test and faecal antigen test; antral biopsy as histology, rapid urease test and micro biological culture as a gold standard test (1,5). Treatment of PU can be achieved by the following: Lifestyle modification; Medical treatment; H. pylori eradication and surgical treatment (5).

The present study is an attempting to explore in some depth, certain aspects of cases suspected to have PU and to identify specific predictors of PU among suspected cases, relate PU to selected risk factors and identify the association between PU and H. pylori infection.

MATERIAL AND METHODS

Study Setting

The study was conducted essentially at the endoscopic unit at Al-Sadr Teaching Hospital. The unit is located in the ground floor of the hospital. Specialist doctors who practice endoscopic examination receive patients five days a week according to a specified time-table. Each day the unit receives 5-10 patients for endoscopic examination. A cross-sectional study involving 152 patients who underwent endoscopic examination by specialist doctors. All patients were interviewed regarding personal bio-data, selected risk factors and detailed symptomatolgy of their conditions. After endoscopic examination, they all were referred to the hospital laboratory for the purpose of investigation of Helicobacter pylori infection.

Population

The study population included cases who complained from abdominal symptoms suggestive of gastro-duodenal pathologies and referred by specialist doctors for endoscopic examination.

Tools

A questionnaire form was used to compile all relevant data. The question consisted of four parts:

A. Biodata.
B. Medical characters: including presence or absence of the major symptoms; epigastric pain, nausea, vomiting and burning sensation.
C. Risk factors: included inquiry about chronic use of NSAID, smoking, alcohol drinking, stress, nature of food, family history of peptic ulcer and history of selected chronic diseases.
D. Endoscopic and laboratory findings.

Variables

These included age, sex, residency, marital status,

education levels, job, symptoms, pattern of Use of NSAID, smoking, alcohol drinking, preference of food, chronic disease, stressful life and family history of peptic ulcer. Endoscopy (1. None 2. Gastritis 3. Peptic ulcer (gastric/duodenal) 4. Others (specified)) and blood test for H. pylori using serum to detect antibodies were done for each case.

Statistical Analysis

Data were analyzed by Statistical Package for Social Sciences (SPSS-Version 20). Results were presented as tables to illustrate comparison of various groups. For statistical significance, Chi-squared and Fisher Exact test were used appropriately.

RESULTS

Demographic Findings

Table 1 show that patients with gastric problems referred to the endoscopic include a wide range of age. Women were more reported (55.3%) than men (44.7%). Most cases were married (74.3%). The primary education level was frequent (32.9%). Most of the women were housewives (79.8%). Employed and non-employed shared close percentages being 19.1% and 21.1% respectively. The rest were either students (7.9%) or retired (7.9%).

Risk Factors and Clinical Features

Table 2 show the distribution of patients according to selected risk factors of PU. The use of NSAID was reported by 46 (30.3%). Active smokers represent 13.2%, ex-smokers 27.0 and passive smokers 11.8% thus the ever exposed to smoking represent 48.0%. Alcohol use was very infrequent reported by only 6 persons (3.9%) and spicy food was reported by 47 (30.9%). Regarding stressful life as perceived by patients was reported by 92(60.5%) and family history was positive in 19.1%. Patients presented with various clinical features as triggers to seek medical advice as shown in *table 3*. The two most frequently reported symptoms were epigastric pain reported by 91.4% and burning sensation reported by 77.6%.

Endoscopic and H. pylori Data

About (25.7%) of the cases showed no gastric lesion of whatsoever *table 4*. Gastritis alone or combined with others was found in 34 (22.4%), PU in 30 (19.8%) and hiatus hernia in 32 (21.1%).

Table 5 show that in the univariate analysis, only vomiting could significantly predict the finding of PU. Logistic regression analysis confirmed the results of univariate analysis also but even vomiting became weaker predictor as shown in *table 6*.

Table 1 - Variables of the studied patients

Characters	No.	%
Age		
20-40	15	9.9
41-60	107	70.4
> 60	30	19.7
Sex		
male	68	44.7
female	84	55.3
Marital status		
single	22	14.5
married	113	74.3
divorce	4	2.6
widow	13	8.6
Education		
Illiterate	20	13.2
Primary	50	32.9
Intermediate	32	21.1
Secondary	25	16.4
High education	25	16.4
Occupation		
Housewife	67	44.1
Employed	29	19.1
Retired	12	7.9
Student	12	7.9
Non employed	32	21.1

Table 2 - Risk factors reported

Characters	No.	%
NSAID use		
Ever used	46	30.3
None	106	69.7
Smoking		
Smoker	20	13.2
Ex –smoker	41	27.0
Passive smoker	18	11.8
Not smoker	73	48.0
Alcohol		
Drinker	6	3.9
None	146	96.1
Food		
Spices added	47	30.9
No spices added	105	69.1
Stress		
Yes	92	60.5
No	60	39.5
Family history		
Yes	29	19.1
No	123	80.9
Chronic disease		
Yes	39	25.7
None	113	74.3

Table 3 - Clinical features reported by the studied patients studied

Characters	No.	%
Pain		
Yes	139	91.4
No	13	8.6
Nausea		
Yes	99	65.1
No	53	34.9
Vomiting		
Yes	63	41.4
No	89	58.6
Burning sensation		
Yes	118	77.6
No	34	22.4

Table 4 - Endoscopic and H. pylori finding among the studied patients

Endoscope finding(Details	No.	%
Non	39	25.7
Gastritis	27	17.8
Peptic ulcer	22	14.5
Hiatus hernia	15	9.9
Gastropathy	14	9.2
GERD	5	3.2
Tumor	5	3.2
Hiatus hernia +gastritis	6	3.9
Hiatus hernia +GERD	5	3.2
Peptic ulcer +GERD	4	2.6
Hiatus hernia +gastropathy	4	2.6
Peptic ulcer +gastropathy	2	1.3
Gastritis +peptic ulcer	1	0.7
Peptic ulcer +hiatus hernia	1	0.7
GERD + gastropathy	1	0.7
Hiatus hernia +tumor	1	0.7
Endoscopic findings (ulcer versus others)		
Peptic ulcer	30	19.7
All other lesions	83	54.6
Normal	39	25.7
H. pylori		
Positive	58	45.7
Negative	69	54.3

The Logistic Regression Analysis

Only sex (male) and stress were significant predictors of PU. All other risk factors were not significant predictors. H. pylori infection was significant predictor of PU, *table 7*.

Distribution of H. pylori in Relation to Gastric Lesions

In *table 8*, H. pylori infection was related to the types of lesions identified in the endoscopic examination. It is very clear that the infection rate was highest among patients with PU (63.0%) as compared to any other gastric lesion (46.4%) or to those with no lesions (29.0%). This variation in infection distribution was statistically significant (P=0.035).

Predictors of Combined PU and H. pylori Infection

Table 9 shows that only three variables could predict the occurrence of PU and H. pylori infection together. These are non-spicy food, male sex and vomiting all other variables tested failed to predict such combination.

DISCUSSION

PU remain of global importance to human health. The incidence of PU has decreased beyond falling H. pylori infection prevalence but remained an important clinical issues due to the rise in the use of NSAID. The

Table 5 - Clinical features as predictors of PU

Clinical sign	PU			P value
	Present No. %	Absent No. %	Total No. %	
Epigastric pain				0.228
Present	29 (20.9)	110 79.1	139 100.0	
Absent	1 (7.7)	12 92.3	13 100.0	
Nausea				0.512
Present	20 (20.2)	79 79.8	99 100.0	
Absent	10 (18.9)	43 81.1	53 100.0	
Vomiting				0.043
Present	17 (27.0)	46 73.0	63 100.0	
Absent	13 (14.6)	76 85.4	89 100.0	
Burning sensation				0.341
Present	22 (18.6)	96 91.4	118 100.0	
Absent	8 (23.5)	26 76.5	34 100.0	

Table 6 - Logistic regression analysis to identify clinical predictors of PU

Predictor	OR	95%CI	P value
Epigastric pain	2.501	0.625-10.014	0.196
Nausea	0.755	0.293-1.945	0.561
Vomiting	2.247	0.935-5.402	0.070
Burning sensation	0.708	0.291-1.1724	0.447

Table 7 - Logistic regression analysis to identify risk factors predicting PU among symptomatic patients

Risk factor	χ^2	P Value	OR	95%CI
Significant predictors				
Gender (male)	5.148	0.023	3.110	1.167-8.289
Stress	5.465	0.019	0.343	0.140-0.841
H. pylori infection	3.859	0.049	2.726	1.002-7.415

PU life time risk among subjects infected with H. pylori is 10-25%. This is much higher than the risk among non-infected persons (6).

The prediction of PU on the basis of clinical features and a package of risk factors could help identify the patients who require endoscopy in a more refined manner. Thus identification of predictors could rationalize the use of endoscopy for diagnosis of PU.

Most of the cases were aged from 41-60 years. This pattern was similar to the findings of a study done in Al-Diwaniah city (7).

Regarding sex, women represented some degree of excess on men but this mix is very different from the data obtained in the study of Al-Diwania city where men accounted for 80% and only 20% of the cases were women (7). These differences might not be true reflection. Most of the patient were married, they seem representative of the general adult population in Basrah governorate (8-10).

According to the clinical presentation the most frequent symptom reported by the patient was epigastric pain (91.4%) and the least frequent was vomiting reported by 41.4%. This pattern is similar to other studies on Medscape which reported the epigastric pain is most common symptom in about 50-80% of duodenal ulcer and 30-40% of gastric ulcer, while burning sensation occur in 20-60% of the patient (11). However the predictability of clinical features to PU is poor and this finding is consistent with known evidence (12).

According to the distribution of risk factors, the ever users of NSAID and consumers of spicy food represent just under one third of the patients. Active smoking was not very prevailing reported by only 13.2% and alcohol use was denied by the great majority of patients.

Table 8 - Prevalence of H. pylori infection among patients with various endoscopic findings

Type of lesion	H. pylori No. (%)		P value
	Positive	Negative	
Normal	9 (29.0)	22 (71.0)	0.035
Any other lesion	32 (46.4)	37 (54.6)	
Peptic ulcer	17 (63.0)	10 (37.0)	

Regarding stressful live was reported in 39.5% of the patient and positive family history in 19.1%, an association with chronic disease was reported in 25.7% mainly was hypertension 11.8% and the less was heart disease only 0.7%. H. pylori infection was fairly common among the cases of peptic ulcer. This suggests that some risk factors are common in this population but not necessarily reflect the distribution at population level. The pattern is more or less similar to the documented risk factors, though the relative share might be different (5,13-16).

According to the endoscopic examination and laboratory findings, 25.7% have no gastric lesion at all. Gastritis was found in 22.4%, PU in 19.8% and hiatus hernia in 13.9%. The extent of PU was much lower than that reported in the study in Al-Diwaniah who reported that the proportion of PU among their series was 55% (7). Higher proportion was reported in another study published in Tikrit Medical Journal where PU represented 43.6% of total endoscoped cases (17). The differences in the pattern of endoscopic findings are likely to be methodological in nature reflecting selection of cases for endoscopy. They could reflect a true difference in the risk of PU.

Table 9 - Logistic regression to predict combined occurrence of PU and H. pylori infection

Risk factor	χ^2	P value	OR	95%CI
Significant predictors				
Non-spicy food	5.422	0.020	6.23	1.336 – 29.077
Male sex	4.286	0.038	5.59	1.096 - 28.487
Vomiting	3.946	0.047	4.66	1.021 – 21.232

Using logistic regression analysis, the significant predictors of PU were gender (male) (p=0.023), stress (p=0.019) and H. pylori infection (p=0.035). This is similar to study in Al-Anbar university which found that the H. pylori infection was a significant predictor of PU at level of (p< 0.05) (18). In another study the authors looked into gastric and duodenal ulcers separately, the prediction was significant in gastric ulcer only but not in duodenal ulcer with respect to the role of H. pylori (19). Our results are similar to a study carried out in Korea where it was found that H. pylori infection and men were strong risk factors of peptic ulcer (16). Data are also similar to a study in BM Journal which found the psychological factor and stress probably interact with H. pylori and other risk factor in causing ulcer disease by inducing acid secretion and promoting H. pylori colonization by neutralizing the inhibitory effect of the bile (20). A study in Iran reported H. pylori infection, smoking, NSAID and male gender were significant predictors of peptic ulcer (11).

According to the distribution of H. pylori in relation to the gastric lesion it was clear in the present study that the link was stronger in relation to peptic ulcer than to other gastric lesions or to cases with no endoscopic lesion. This gradient in positivity of H. pylori might support the role of this infection in peptic ulcer. The positivity of H. pylori in the present study are lower than the figures reported in Al-Diwania study. Also they are lower as compared to the results of other studies (Iraqi postgraduate, Korean study). In the Iraqi postgraduate, the link of H. pylori infection to gastric ulcer was much stronger than to duodenal ulcer.

In the present study, the results showed significant association between peptic ulcer and H. pylori infection, male gender and subjectively reported stress. In this sense, the results agree with the results of two extensive meta-analyses carried out to explore the role of H. pylori. The meta-analysis documented two other major risk factors, namely smoking and use of NSIDs (21,22). With respect to the present study, a nice gradient among risk of H. pylori and peptic ulcer, other gastric lesions and normal gastric lumen. The percentage of persons with positive H. pylori among those with peptic ulcer was significantly higher as compared to those who have other gastric lesions and much more higher as compared to persons with no lesions at all. The high link between peptic ulcer and H. pylori infection and the higher risk of gastric cancer among peptic ulcer cases with infection (23) necessitates continuous research and care to eradicate this infection.

Male sex, Non-spicy food and vomiting are the three predictors of the probability that a person has both PU and H. pylori positive results. All other variables which were entered in the logistic regression analysis were not able to predict this combination. This a unique result which need further exploration in future research.

CONCLUSION

Most patient with gastric problems are middle age, female, married and housewives. The commonest clinical feature was epigastric pain and burning sensation. According to the endoscopic finding about one fourth of the patient have no gastric lesion while the main lesion was gastritis then hiatus hernia and peptic ulcer. There is a significant association between PU and H. pylori infection, male gender and stress. Burning sensation was strong predictor for H. pylori infection. Meanwhile male gender, non-spicy food and vomiting are predictors to have PU and H. pylori infection together.

Conflict of Interest

All author declare that they have no conflict of interest.

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Ethical Approval

Ethical approval was obtained of Department of Surgery, AL-sadder Teaching Hospital, Basrah Health Directorate (440 in 2022).

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