Helicobacter pylori infection association with anxiety in patients with upper gastrointestinal symptoms in Hadhramout.

Ahmed M daakeek[1]*, Nabeel S. Musiaan[1] and Ali Ahmed Al-Zaazaai[2]

[1]Associated Professor of medicine , Medical Department, Faculty of Medicine and Health Sciences, Hadhramout University, Mukalla, Yemen

[2]M.Sc. Department of Pharmacy, Wenzhou Medical University, Wenzhou, PR, China

Abstract

Background: *Helicobacter pylori* (H. pylori) infection is highly prevalent infection in Yemen that has been linked with numerous gastrointestinal diseases. An association between it and anxiety has been obeserved. Few studies have focused on the relationship between H. pylori infection with anxiety.

Objective: In this study, we aimed to assess the relation between anxiety and H. pylori infection in patients with gastrointestinal symptoms.

Material and methods: This prospective study included 233 adult patients with upper gastrointestinal symptoms who were presented to medical outpatient in Mukalla city between August 2022 and February 2023. Data collected using four sections performa: demographic features, upper gastrointestinal manifestations, anxiety assessment using the Hamilton Anxiety Scale (HAS), and H.pylori detection. Patients were divided into three groups based on their age and two groups based on H.pylori status.

Results: Most of the patients were female, with a female to male ratio of 2.6:1, and the mean age was 35.03 years (SD ± 13.732), with the 15-35 years age group being the most common (54%). Epigastic pain is a common upper gastrointestinal symptom, while fear and insomnia are also common anxiety symptoms. Most cases were positive for H;pylori (65.7%). Anxiety was observed in (96.1%), of H. pylori positive patients and most are moderately anxious (55.2%), with significant correlations between them (p-value 0.013).

Conclusion: H. pylori infection was common in female aged less than 55 years, and is significantly associated with anxiety.

Keywords: H. pylori infection, HAS score, Anxiety.

Introduction

Helicobacter pylori (H. pylori) is Gram-negative and spiral, and has multiple flagella at one end, which make it motile, allowing it to burrow and live beneath the mucus layer adherent to the epithelial surface [1]. The prevalence of H. pylori is high in developing countries (80–90% of the population) and much lower (20–50%) in developed countries.

Infection rates are highest in lower-income groups. Infection is usually acquired in childhood; although the exact route is uncertain, it may be faecal–oral or oral–oral [2]. The vast majority of colonized people remain healthy and asymptomatic, and only a minority develop clinical disease [1]. *H. pylori* infection has been recognized as the main risk factor for many upper digestive tract disorders and complications, including life-threatening bleeding from the digestive tract, gastritis, non-ulcer dyspepsia, Mucosa-Associated Lymphoid Tissue (MALT) lymphoma and gastric cancer [3].

The presence of H. pylori-negative upper digestive tract abnormalities, such as peptic ulcers and the fact that not all H. pylori-infected patients develop ulcers, with only 10%-15% of them presenting dyspeptic symptoms[3], suggest a role for other individual factors, including nervous system imbalance, as an indispensable cofactor in gastritis or ulcer disease pathogenesis [4].

These imply that H. pylori infection may induce changes in the function and morphology of the digestive tract both directly through cytotoxin release and inflammatory process activation, and indirectly, via the brain-gut axis [5]. Gut-brain axis is defined as the relationship of gastrointestinal with brain function and mental status. Mental stress is associated with personality-dependent gastric acid secretion changes [6]. Moreover, gastric inflammation leads to anxiety and depression-like behaviors via the neuroendocrine pathways especially in female [7].

***Correspondence to:** Ahmed Mubarak Daakeek , Associated Professor of Medicine, Medical Department- Faculty of Medicine and Health Sciences - Hadhramout university, Mukalla, Yemen, Email: daakeek@gmail.com

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There are several Studies have reported that the change in the gut microorganisms could cause emotional disturbances, behavioral changes as well as mental health problems, but the mechanism is still under investigation [8].

This study aims to estimate the relations of H.pylori infections to the psychiatric manifestation in patients with upper gastrointestinal symptoms and the frequency of anxiety in those patients.

Material and Methods

This study conducted in private medical center in Mukalla city the capital of Hadhramout governorate and the center of all eastern governors of Yemen, which include Shabowa, Mahra and Scotora besides Hadhramout, and all this four governorates called Hadhramout sector, so it is a reference city for many cases that come and transferred from these governors for treatment.

This prospective study included 233 adult patients with Upper GastroIntestinal Tract (UGIT) symptoms who visited the medical outpatient between August 2022 and February 2023 (n=223), examined the connection between H. pylori infection and anxiety symptoms.

A specially designed Performa with four sections was used for data collection. Section one contains demographic details including age, gender and residence. All patients aged 15 years or older were included. The age is further grouped in decades to three age groups: 15–35, 36–55, and above 55 years.

The second section inquired about the details of a clinical profile including UGIT symptoms which were defined at least two or more of the following symptom: epigastric pain or epigastric burning symptoms, retrosternal pain, heartburn, regurgitation, nausea and vomiting, early satiation, and postprandial fullness, and for the last 2 weeks.

The third section consists of the Hamilton Anxiety Scale (HA) assessment of anxiety, which is used to assess the severity of anxiety symptoms. The scale consists of 14 items; each item contains a number of symptoms, and each item is graded from zero to four according to severity. The results of the evaluation are reading as; mild severity =17 or less, moderate =18-24, and severe = 25-30.

Fourth section records investigation primarily H.pylori infection by detection of stool antigen using Rapid Pylori Antigen (TRP) immunochromatography kit, as per manufacturer's instructions. The overall sensitivity is 97.6% and specificity is 96% [2]. The test is useful in the diagnosis of *H. pylori* infection and for monitoring efficacy of eradication therapy; it is a cheap and easy method for the initial diagnosis of *H. pylori* infection. The patients were divided into two groups based on the presence or absence of *H. pylori* infection: *H. pylori* positive and *H. pylori* negative groups. All cases were undergoing ultrasonographic imaging procedures to exclude biliary, pancreatic, and other diseases. Upper endoscopy was not done in almost all cases.

Data were analyzed using statistical software SPSS version 23, and Microsoft Office Excel. Descriptive statistics of demographic variables were calculated including frequencies, percentages, means and ranges. Patient's characters were compared using the Chi square test. A1-sided $p<0.05$ was considered statistically significant at the 95% confidence level.

Ethical consent

The College of medicine - Hadhrmout University (HUCOM), authorized the protocol for this study. All study participants gave their written consent after being informed of the objectives of our investigation.

Result

The study included 233 patients with upper gastrointestinal symptoms, ranging in age from 15 to 73 years and mean age was 35.03 years (SD ± 13.732), The majority of these patients were in age group of 15-35 years old (n=126, 54.1%),followed by age group 36-55 years (n=82, 35.2%), and both constitute 89.3% of all cases, while older than 55 years age group considered the last group, as shown in (Figure 1), and there is significant correlation between age and *H.pylori* status (p value 0.012). The majority of cases being females (n=169, 72.5%) with female to male (ratio 2.6:1), the distribution of cases according to sex and age groups depicted in (Figure 2).

Most of the cases from Hadhramout governorate (n=154, 66.1%), followed by Mahra governorate (n=47, 20.2%), Shabowa governorate (n=26, 11.2%) and Socotra governorate the last (n=6, 2.6%).

All cases exhibit at least two symptoms of UGIT, and epigastric pain or epigastric burning symptoms are the most prevalent symptoms constitute 97.4% (n=227) of cases, while other symptoms are less frequent. (Table 1) list the most frequent symptoms of anxiety according to HAS in relation to *H.pylori* status including fear, insomnia, cardiovascular, respiratory, and gastrointestinal symptoms which were the most common.

A majority of the cases (n=163, 65.7%) were H. pylori positive, with females accounting for the bulk of cases (n=113, 56%). Nearly half of the cases (51.3%) were in the 15–35 age range. Although there were 34.3% (n=80) H. pylori negative patients, the majority of them were female and belonged to the same age group. (Table 2) displays the distribution of cases by age groups sex, and *H. pylori* status.

We employed the HAS questionnaire in the study to examine the level of anxiety in our cases, and we discovered that 214 of them (91.8%) had anxiety of varying severity. Of the 147 individuals with H. pylori positivity who had anxiety status, n= 79, or 55.2%, had moderate anxiety (n=41, 27.9%) had mild anxiety, and (n=27, 18.4%) had severe anxiety. With a p value of 0.013, there is a significant association between anxiety and H. pylori infection. In contrast, among the 80 cases in which *H. pylori* negative , anxiety was present in 66 (82.5%) patients, the majority of whom had moderate intensity ((n=35, 43.8%), whereas moderate and severe anxiety were less common (22.5% and 17.5%, respectively). The level of anxiety in both *H. pylori* groups is shown in (Figure 3).

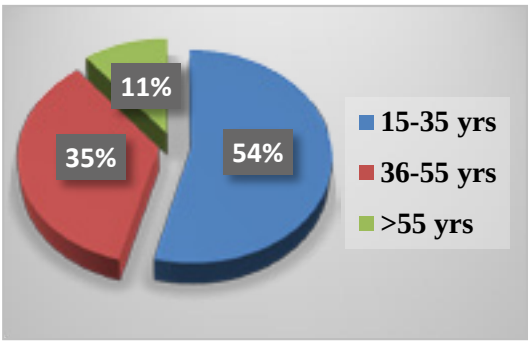

***Figure 1**: Frequency of age groups in all cases.*

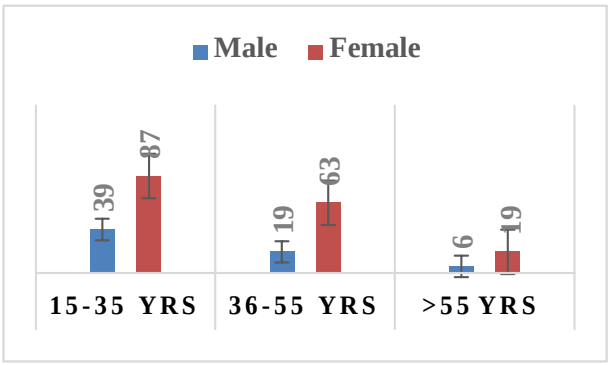

***Figure 2**: Distribution of cases according to age groups and sex.*

***Table 1**: Anexiety symptom frequency in relation to H.pylori status.*

Anxiety Items	H.pylori +ve		H.pylor-ve	
	No	%	No	%
Worries	115	80.4	52	77.6
Tension	88	61.5	32	47.8
Fears	132	93.3	61	91
Insomnia	129	90.2	60	89.6
Difficulty in concentration	88	61.5	33	49.3
Depressed mood	47	32.9	24	35.8
Somatic (muscular)	26	18.2	15	22.4
Somatic (sensory)	36	25.2	16	23.9
Cardiovascular symptoms	127	88.9	59	88.1
Respiratory symptoms	124	86.7	56	83.6
Gastrointestinal symptoms	123	86	54	80.6
Genitourinary symptoms	28	19.6	12	17.9
Autonomic symptoms	37	25.9	16	23.9
Behavior at interview	12	8.4	5	7.5

***Table 2**: Distribution of H. pylori cases according to age groups and sex.*

Age group	H.pylori +ve			H.pylori -ve			Total cases
	Male	Female	Total	Male	Female	Total	
15-35 years	26	58	84	13	29	42	126
36-55 years	14	45	59	5	18	23	82
> 55 years	0	10	10	6	9	15	25
Total	40	113	153	24	56	80	233

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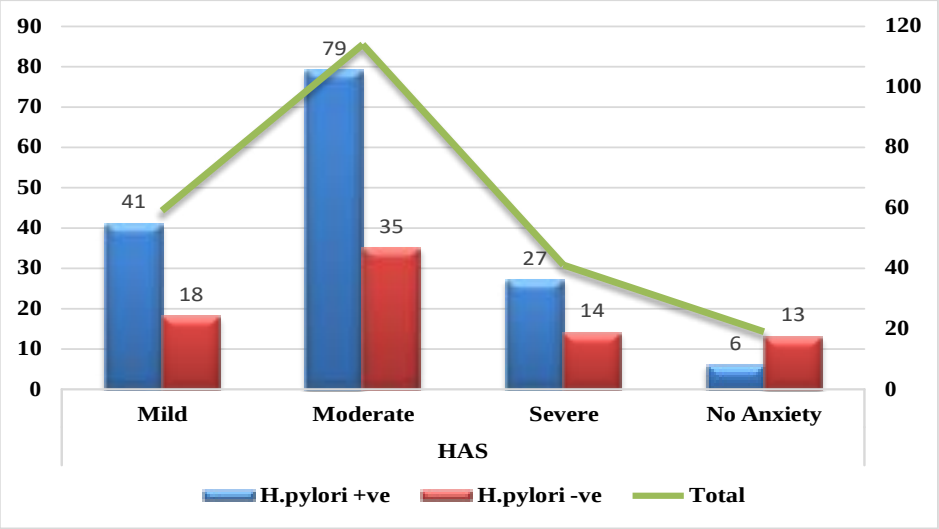

***Figure 3**: Comparison of anxiety severity in H.pylori positive and negative patients.*

Discussion

H. pylori prevalence is higher in our country and is detected in patients with esophagitis, gastritis and peptic ulcer diseases as well as asymptomatic patients [9- 11], and there is a relation between it and psychiatric manifestations in some studies [12, 13]. In this study, we try to investigate the association between H.pylori and anxiety in 233 patients presents with UGIT manifestations.

In this study, Hadhramout governarates accounted for 66.1% of the cases. While Mahra, Shabow, and Scotra governments are less frequent, this is primarily because of their far distance from Mukalla, particularly Socotra, which is an island and has no other means of transport outside flights and boats, as well as their higher cost given the country current economic situation.

The majority of *H. pylori* cases were females, which is consistent with research conducted in our country [9, 10], as well as in Bahrin, Saudi Arabia, Egypt, Iran, and other nations in the Eastern Mediterranean region [5, 7, 13-16]. The age range 15-35 years was the most prominent and the most affected age group was under 55 years old, according to several research conducted in Yemen and its neighboring countries [5,13-17].

No matter whether a patient had *H. pylori* or not, the most prevalent presenting symptom in almost all cases was epigastric pain resembling other studies [18]. While the most common symptoms of anxiety were fear and insomnia in 93.3% and 90.2% of all anxiety-related *H. pylori* positive patients, respectively.

Our study demonstrates that patients with confirmed *H. pylori* infections have higher rates of anxiety than negative cases, with female patients being more likely to experience this. This finding is consistent with studies from Yemen [18], Bahrain [5], Saudi Arabia [16], and other countries that have also confirmed a connection between *H. pylori* and stress and anxiety [19-21].

The relationship between psychiatric disorders and *H.pylori* infection has been studied, and most patients in this research had some sort of anxiety with (26.8%) having mild Anxiety, (51.6%) moderate Anxiety, and (17.6%) severe Anxiety, while those without anxiety constitute about (3.9%) of all cases. This study finding was supported by some studies that discovered a strong positive relationship between *H. pylori* presence and anxiety symptoms [6, 22]. Additionally, numerous studies have shown that the elimination of *H. pylori* alleviates UGIT symptoms [23, 24, 25]. However, other research, like as the Kivrak, Y., et al. study, [26], disputes the relationship between the two.

H.pylori negative cases make up less percentage 34.3% than positive cases, there is considerable cases having anxiety, and this may attributable to infection and stress rather than *H.pylori* infection.

H. pylori negative patients make up a smaller fraction (34.3%) than positive cases. There are many cases of anxiety for them, which may be caused by stress and fear of infection rather than *H. pylori* infection.

In an intriguing approach, our research found that the positive *H. pylori* group had a highly significant rise in moderate and severe anxiety when compared to the negative *H. pylori* group.

Conclusion

Hadhramout and Yemen in general have a high rate of *H. pylori* infection, mostly in female patients under 55 years old, and a high rate of *H. pylori* infections associated with moderate to severe anxiety. Therefore, an evaluation of presence anxiety is crucial in patients with gastrointestinal symptoms and symptoms of dyspepsia.

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