Original Article

Helicobacter Pylori Infection Among Obese Dyspeptic Patients

Helicobacter Pylori Infection Among Obese

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ABSTRACT

Objective: To determine the frequency of Helicobacter pylori infection among obese dyspeptic patients.
Study Design: cross sectional descriptive study
Place and Duration of Study: This study was conducted at the Liaquat University Hospital Hyderabad / Jamshoro from March, 2024 to August, 2024.
Methods: All the obese patients between 18 to 60 years age, either gender having dyspeptic symptoms were recruited by non-probability consecutive sampling and explored for Helicobacter pylori infection. The data was collected on predesigned proforma while frequency (percentage) and mean ± SD was calculated for qualitative and quantitative variables.
Results: Total 147 obese dyspeptic individuals were studied while the Helicobacter pylori infection was detected in 91 (62%) patients. The statistical significance was observed for H. pylori in accordance to sex ($p<0.01$), residence ($p=0.03$), duration of infection ($p=0.04$), cigarette smoking ($p<0.01$), hypertension ($p=0.04$), hyperlipidemia ($p<0.01$), diabetes mellitus ($p<0.01$) consumption of filtered or boiled water ($p<0.01$) and consumption of outside food ($p=0.01$). The frequency and proportions observed were male 61.9%, female 38.1%, urban and rural as 59.2% and 40.8%, smoking 41.5%, hypertension 58.5%, hyperlipidemia 61.9%, diabetes mellitus 59.2%, consumption of filtered or boiled water 46.3%, consumption of outside food 43.5% and vegetarian 41.5%.
Conclusion: H. pylori commonly seen in obese dyspeptic individuals.
Key Words: Obesity, Dyspepsia and Helicobacter pylori

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INTRODUCTION

The world health organization (WHO) categorizes people as average weight (18.5 to 25 kg/m^2), underweight (under 18.5 kg/m^2), obese (over 30 kg/m^2) and overweight (25 to 30 kg/m^2) based on their Quetelet index. Obesity is global concern with rising prevalence.[1]Asian populations with BMI >27.5 are considered as obese.[2]According to a research in the Lancet, the percentage of obese individuals was higher in 2013 37% for men and 38% for women than it had been in 1980.[3] However, because they receive enhanced medical services and risk factor management, obese people live longer than those in developing countries. Obese people also face greater burdens from the complications associated with their obesity, such as hypertension, type II diabetes, persistent kidney disease, fatty hepatic diseases, and other conditions.[4-6] The gram-negative, bacillus bacteria known as H. pylori is known to have colonized the stomachs of humans and was first identified in 1984. Nearly half of all persons on the planet have H. pylori infections; in 2015, there were 4.4 billion infected individuals.[7,8] The rate of H. pylori infection varies by area; in underdeveloped nations, it is 50.8%, whereas in industrialized nations, it is 34.7%.[9, 10]The relationship between H. pylori infection and obesity is still being debated, even though the etiology of obesity is far more complicated.[11, 12]According to a study published in Al-Zubaidi AM, et al.[13], Xu X, et al.[14], Erol A[15], et al., and Suki M, et al[16] the prevalence of Helicobacter pylori infection in obese people with different dyspeptic symptoms is 58%, 42%, 57.2%, and 64.5%.

Previous research produced conflicting findings; for example, some studies found that people with an infection with H. pylori had greater BMIs than those without the virus. For all it knows, the literature for H. pylori infection among obese individuals in our population is scarce. Thus based on former conflicting, contrasting & contradictory results and variability among previous reported prevalence the present study was conduct to determine the magnitude of H. pylori among obese dyspeptic individuals in our population

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presents for weight concern or dyspeptic symptoms at our hospital. With this mean the patients could be properly rationalized to demonstrate the significance role of BMI in context to Helicobacter pylori infection.

METHODS

This cross sectional descriptive study was conducted at Liaquat university hospital Hyderabad from March, 2024 to August, 2024 on the subjects fulfilling the inclusion criteria and by taking informed consent. The sample size was calculated by taken the prevalence of Helicobacter pylori as 42%14; d = 8%, n=147 obese individuals were taken. The inclusion criteria was the obese patients between 18 to 60 years of age, either gender had dyspeptic symptoms as discomfort or pain / burning that occurs in the upper abdomen often after eating or drinking for more than 02 week duration while the exclusion criteria were already on Helicobacter pylori eradication, anti-lipid therapy or anti-obese therapy, the pregnant / lactating females and the patients with history of Cushing syndrome, malignancy (carcinoma of stomach or colon), liver cirrhosis, nephrotic syndrome and chronic renal failure and had history of alcohol consumption (evaluate by taking relevant history of alcoholism). All the obese patients having dyspeptic symptoms as discomfort or pain / burning that occur in the upper abdomen often after eating or drinking for more than 02 week duration were admitted in ward recruited by non-probability consecutive sampling followed by enrolled in the study. The obesity was estimated through the body mass index (BMI) which was measured by principal researcher as calculating weight (in kilograms) assessed by weight machine over height squared (in meters) [assessed through height pointer weight machine] as a part of physical examination by formula BMI = kg/m^2 while the dyspepsia was labeled by taking relevant history about discomfort or pain / burning that occurred in the upper abdomen often after eating or drinking. Following that, a 2-cc venous blood sample was obtained from each obese dyspeptic person using a sterile 5-cc syringe to assess them for Helicobacter pylori infection. The sample was subsequently sent to a laboratory for examination. A senior pathologist with at least five years of experience took the blood specimen and performed the biochemical analysis. Data was gathered on pre-designed proforma, and the research team as a whole covered all study-related costs. While the effect modifiers and other explanatory factors, such as age, gender, place of residence (rural or urban), H. pylori infection, cigarette smoking, consumption of filtered or boiling water, intake of outside food, and vegetarianism, were also studied, the study was pertinent and unique to its goal. SPSS version 21.00 was used to analyses all patient data. The frequency and percentage was calculated for gender and residence (urban or rural), H. pylori infection, smoking, duration of infection, educational status, hypertension, hyperlipidemia, diabetes mellitus, consumption of filtered or boiled water, consumption of outside food and vegetarian. The mean and standard deviation (SD) was calculated for quantitative variables such as age and duration of dyspeptic symptoms. The stratification was done for age, gender and residence (urban or rural), smoking, duration of infection, educational status, hypertension, hyperlipidemia, diabetes mellitus, consumption of filtered or boiled water, consumption of outside food and vegetarian to observe the impact on the result and manage the modifiers. On categorical variables, the post-stratification chi-square test was used at a 95% confidence interval, and a p-value of less than 0.05 was regarded as statistically significant.

RESULTS

Total 147 obese individuals, of 18-60 year age and either gender had dyspeptic symptoms for more than two weeks duration was explored at Liaquat University Hospital Hyderabad. The mean ±SD for age (years) and duration of dyspeptic symptoms is 37.59 ± 6.31 and 6.87 ± 3.17 while the median for age (yrs) and duration of dyspeptic symptom is 35.00 and 7.00. The Helicobacter pylori infection was identified among 91 (62.0%) obese individuals while the stratification of H. pylori infected patients according to age, gender, residence, duration, educational status, smoking, hypertension, hyperlipidemia, diabetes, consumption of filtered or boiled water, consumption of outside food and vegetarian is presented in Table 01. The statistical significance was identified for Helicobacter pylori infection in accordance with sex ($p<0.01$), residence ($p=0.03$), duration of infection ($p=0.04$), cigarette smoking ($p<0.01$), hypertension ($p=0.04$), hyperlipidemia ($p<0.01$), diabetes mellitus ($p<0.01$), consumption of filtered or boiled water ($p<0.01$) and consumption of outside food ($p=0.01$) while statistical non significance observed for H. pylori in accordance to age, educational status and vegetarian ($p=0.97$, $p=0.86$ and $p=0.93$) respectively.

Table No. 1: The Demographical and Clinical Parameters of Study Population

PARAMETER	FREQUENCY (n=147)	P-VALUE
AGE (yrs)		
18-29	21 (14.3%)	0.97*
30-39	33 (22.4%)	
40-49	45 (30.6%)	
50-60	48 (32.7%)	
GENDER		
Male	91 (61.9%)	<0.01**
Female	56 (38.1%)	
Duration Of Infection (Wks)		
2-4	60 (40.8%)	0.04**
5-7	48 (32.7%)	

≥8	39 (26.5%)	
Residence		
Urban	87 (59.2%)	
Rural	60 (40.8%)	0.03**
Educational Status		
Illiterate	48 (32.7%)	
Primary	27 (18.4%)	
Middle	21 (14.3%)	0.86*
Secondary	29 (19.7%)	
Higher	22 (15.0%)	
Smoking		
Yes	61 (41.5%)	
No	86 (58.5%)	<0.01**
Hypertension		
Yes	86 (58.5%)	
No	61 (41.5%)	0.04**
Hyperlipidemia		
Yes	91 (61.9%)	
No	56 (38.1%)	<0.01**
Diabetes Mellitus		
Yes	87 (59.2%)	
No	60 (40.8%)	0.01**
Consumption of Filtered or Boiled Water		
Yes	68 (46.3%)	
No	79 (53.7%)	<0.01**
Consumption of Outside Food		
Yes	64 (43.5%)	
No	83 (56.5%)	0.01**
VEGETARIAN		
Yes	61 (41.5%)	
No	86 (58.5%)	0.93*

*Statistically significant
**Statistically non-significant

DISCUSSION

A major global public health concern, obesity is a chronic non-communicable disease that can lead to or worsen a high burden of illnesses, including diabetes, hypertension, hyperlipidemia, heart disease, chronic renal diseases, fatty liver diseases, and others.[17] Furthermore, it has become more common in recent years, most likely as a result of contemporary lifestyles, decreased physical exercise, high-calorie intake, and other factors. The incidence of infection with Helicobacter pylori was shown to be higher in obese individuals than in non-obese individuals in a retrospective investigation on the Chinese population; however, the findings were not statistically significant.[18]Lately, the involvement of H pylori in the pathophysiology of obesity and nutritional issues has received more attention.[19,20] The prevalence of obesity has risen to levels comparable to that in industrialized nations. Prior studies have not consistently shown the association among H pylori and weight gain.[21, 22] Based on the findings of urease tests and culture tests, in an other study, researcher first identified that the incidence of H. pylori in the guts of morbidly obese individuals was low, 26.7% in 15 obese patients. The seroprevalence of H. pylori bacteria among obese dyspeptic people in the current study is 62.0%, consistent with these previous investigations. However, several studies using a non-case-control design have demonstrated that the prevalence of H pylori is not affected by body weight.[23] The inconsistent results can be explained by a number of factors, including small study sizes, disparate definitions of obesity and patient selection, varied techniques for diagnosing H pylori infection and a failure to take confounding factors into account. It will take more extensive prospective investigations of similar participants that fully account for confounding factors to definitively prove that H pylori has a protective function in patients who are morbidly obese. H pylori-induced prolonged stomach inflammation would affect the expression of intestinal hormones including ghrelin, which would cause dysregulation of hunger and calorie balance. As a result, people who were infected with H pylori during their early years are more likely to experience reduced appetite and eating habits as a result of improper hormone signaling in the stomach that regulates hunger and satiety.[24] The former observations have shown that the dynamics of stomach and plasma ghrelin as well as nutritional status are changed as a result of H pylori infection. Evidence, however, is inconclusive as to whether H pylori infection affected ghrelin levels and metabolic factors.[25] Therefore, more thorough research in this area is required to elucidate the connection and linkages between H. pylori infection and the onset of obesity. The gut immune system has been linked to metabolic diseases, including obesity, in recent times, according to mounting data. According to reports, persons with morbid obesity had a lower capacity for monocytes to develop into macrophages, suggesting that the immune systems of obese individuals are more conducive to H. pylori survival. However, until they stop multiplying and differentiate into adipocytes, pre-adipocytes may exhibit phagocytic activity towards germs in the form of macrophage-like cells. This shows that H. pylori may enhance the adipose tissue during immunological process.[26] The clinical course of infection with H. pylori and obesity is significantly influenced by the oxidative stress brought on by reactive oxygen species production. Because of the DNA base alteration brought about by the breakdown of deoxyguanosine, 8-OHdG is maybe the most helpful oxidative DNA damage marker. This lesion is also very common and mutagenic, making it a critical form of DNA damage.[27, 28]

CONCLUSION

The Helicobacter pylori infection was detected in 91 (62%) patients. The statistical significance was detected

for H. pylori in accordance to gender (p<0.01), residence (p=0.03), duration (p=0.04), smoking (p<0.01), hypertension (p=0.04%), hyperlipidemia (p<0.01), diabetes mellitus (p=0.01), consumption of filtered or boiled water (p<0.01) and consumption of outside food (p=0.01) while statistical non significance observed for obese dyspeptic individuals in accordance to age and vegetarian (p=0.97, p=0.86 and p=0.93) respectively. The frequency and proportions observed were male 61.9%, female 38.1%, urban and rural as 59.2% and 40.8%, smoking 41.5%, consumption of filtered or boiled water 46.3%, consumption of outside food 43.5% and vegetarian 41.5%. It is necessary to conduct additional extensive prospective epidemiologic studies that fully account for confounding variables and comprehensive mechanistic analyses to clarify either H. pylori may be a pathognomonic factor for obese dyspeptic individuals.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Ghulam Rasool, Muhammad Kashif Shaikh, Mumtaz Ali Lakho
Drafting or Revising Critically:	Imran Karim, Syed Zulfiquar Ali Shah
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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