

Incidence of Helicobacter Pylori infection in Obese & Non-Obese Subjects

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Abstract

Background: One of the most popular health problems that have become a worldwide epidemic is obesity. Many complications have been raised as a sequence of obesity such as, diabetes mellitus, sleep apnea syndrome, hypertension and many other cardiovascular diseases. ⁽¹⁾ Helicobacter pylori (H pylori) is a Gram-negative, flagellated bacterium that is widely distributed all over the world especially in developing countries. ⁽²⁾ How often H pylori infection is found in obese patients is a debate, some reports showed low prevalence of H pylori in obese patients if compared to non-obese

patients ⁽³⁾, other reports showed a higher prevalence in obese patients ⁽⁴⁾, while some studies found an increase in body mass index (BMI) after H pylori has been eradicated. ⁽⁵⁾ **Objective:** Incidence of H pylori infection in obese patients in comparison to non-obese one. **Method:** fifty obese and fifty non obese patients were included in the study, H pylori infection was tested using stool antigen test. **Results:** There was high incidence of H pylori infection in obese patients as compared to non- obese one. **Conclusion:** H pylori infection is more common in obese patients than non-obese one. **Keywords:** H.Pylori, Obesity

Introduction

Many factors are encountered as a cause of obesity; these factors may be genetic, behavioral, metabolic, or environmental. The most important of which are the behavioral and environmental factors. ⁽¹⁾

Obesity has a social and psychological impact on the individual in addition to its impact on the health, as many diseases are associated with obesity such as diabetes mellitus, dyslipidemia, hypertension, and ischemic heart disease. Moreover high body mass index (BMI ≥ 35 kg/m²) is associated with high mortality rates. ⁽¹⁾

H. Pylori is a microaerophilic, gram negative organism, considered as the leading cause of many diseases such as chronic gastritis, peptic ulcer disease, mucosa-associated lymphoid

tissue lymphoma, and gastric cancer. H. pylori can affect other systems in our body such as cardiovascular and immune systems, recently it was found to be involved in insulin resistance and, obesity. ⁽²⁾

How often H pylori infection is found in obese patients is a debate, some reports showed low prevalence of H pylori in obese patients if compared to non-obese patients, ⁽³⁾ other reports showed a higher prevalence in obese patients, ⁽⁴⁾ while some studies found an increase in body mass index (BMI) after H pylori has been eradicated. ⁽⁵⁾ More studies are needed to determine the incidence of H pylori infection in obese subjects in comparison to non-obese one.

Methods

The study will be conducted on 50 obese patients, and 50 non-obese patients attended the outpatient clinic or admitted to Medical research institute inpatient wards for any medical reason (without overt gastrointestinal manifestations), after taking their informed consent in a case control study.

Inclusion criteria:

Obese patients with body mass index (BMI) ≥ 30 kg/m² and non-obese patients with $18.5 < \text{BMI} < 25$ kg/m² according to WHO criteria. (6)

Exclusion criteria:

Individuals with any of the following will be excluded: chronic liver or renal failure, malignancy, those who having history of eradication therapy and those with history of significant upper GI symptoms.

- Data will be collected from the hospital medical records.
- Thorough clinical examination including weight and height.
- Routine laboratory investigations including: liver function tests, renal function tests, electrolytes, complete blood picture, fasting plasma glucose level, and lipid profile. (7)
- Ultrasound abdomen. (8)
- Stool antigen test for diagnosis of H.pylori infection. (9)

Results

The mean age for H pylori +ve patients was (36.2±12.1yrs) and in H pylori –ve patients it was (34.1±12.3yrs), P= 0.39.

The mean BMI in obese patients was (46.1±7.3), and in non-obese patients it was (24.4±1.9).

Male and female distribution among H pylori + ve obese patients was found to be 30%, and 70% respectively, while in H pylori + ve non-obese patients it was 35%, and 65% respectively, P= 0.041.

The prevalence of H pylori in Obese patients, was found to be 64%, while in non-obese patients it

was 31%, P= 0.05.

The incidence of fatty liver in H pylori + ve obese patients, was 55.1%, and in H pylori – ve obese patients it was 30.1%, P= 0.05.

However, the incidence of fatty liver in H pylori + ve non-obese patients was 41.1%, and in H pylori –ve non-obese patients was 21.2%, P =0.06.

Discussion

Finding a relation between obesity and H pylori infection is still under investigation, it is known that H pylori infection is more prevalent in older age group and confirmed through multiple studies, one of them is the study of Marusic, (10) who found that patients with H pylori are around 45-64 years, in this study the peak incidence was between 24-48 years, this is because most of the obese patients who were involved in the study were in the middle age group.

H pylori distribution between male and female showed high prevalence of infection in obese females as it was found to be 70% versus 30% in obese males, and 65% in non- obese females versus 35% in non-obese males, this found to be matching with the study of Ghadimi who did his study in Babol, (11) and Marusic study who found the infection is predominant in females with male to female ratio about 0.92. (10)

In this study fatty liver was more common in H pylori + ve patients specially the obese one as *H. pylori* infection is found to be a risk factor for the development of nonalcoholic fatty liver disease (NAFLD), as it is linked to insulin resistance which is closely related to NAFLD. (12)

This study confirmed the high prevalence of H pylori in obese patients more than non-obese one as it was found in 64 % of obese patients while it was found only in 31% of non-obese patients and these results are matching the results of Arslan (13) who found prevalence of H pylori in obese patients to be 66.2%, and in non-obese patients to be 35.2%. This high prevalence of H pylori in obese patients is attributed to alter both innate and adaptive immunity that found in obese subjects, this is attributed to presence of less

mature monocytes with lower number transformed into macrophages with reduced number of polymorphnuclear bactericidal ability. ⁽¹⁴⁾

In addition, there is decreased activity of natural killer cells in morbidly obese subjects if compared to normal individuals matched for age and gender. ⁽¹⁵⁾ Another study found suppression of peripheral blood mononuclear cells chemokine and cytokine production, leading to impaired immune response to infection which is corrected by weight loss. ⁽¹⁶⁾

On the other hand some studies found that H pylori infection decreases ghrelin secretion through its effect on gastric mucosa and consequently reduce appetite, leading to increased weight after H pylori eradication with increased plasma ghrelin levels. ^(17, 18)

The different results obtained from previous studies may be due to using different diagnostic tools in detecting H pylori infection, as some studies used serologic testing which is less sensitive and specific (85% and 79%) if compared to histologic testing (>95% for both), ⁽¹⁹⁾ it is also inferior to rapid urease test and antigen stool test for the diagnosis of H pylori, as antibodies remain in the blood of the patient even after eradication of infection. ^(9, 20)

Conclusion

There is high prevalence of H pylori infection in obese patients, and this study raised the issue of whether obese patients should be screened for H pylori infection even if not symptomatic.

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