

ORIGINAL ARTICLE

Iron Deficiency Anemia (IDA) in Helicobacter Pylori Infection Patients: A Recent Study

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ABSTRACT

Objective: The study's goal is to find out how common iron deficiency anaemia (IDA) is among those who have helicobacter pylori infection.

Study Design: Cross-sectional/prospective study

Place and Duration: Study was conducted at BHU 28 GB Jaranwala within duration of Aug 2021-Feb 2022.

Methods: In all, there were 95 patients of all sexes, ranging in age from 20 to 70. Detailed information about each patient's background and current residence was obtained through informed written permission from each one. It was found that every patient in this research had helicobacter pylori infection. Blood samples from the individuals were tested for serum iron, transferrin saturation, ferritin, and total iron-binding capacity. It is possible to identify H. pylori infection by the use of urea breath tests, stool antigen testing, fast urease testing, or histopathology. SPSS 22.0 was used to analyze all of the data in the study.

Results: Among 95 patients, 57 (60%) were females and 38 (40%) were males. Mean age of the patients 33.41 ± 8.44 years with mean BMI 25.09 ± 7.31 kg/m². Most of the cases were illiterate and were from rural areas. 55 (57.9%) cases had poor socio-economic status. Mean Hemoglobin level was 12.1 ± 3.11 (g/dl) mean serum iron level was 49.5 ± 8.31 (ug/dl) and mean serum ferritin level was 121.6 ± 31.56 (ng per ml). Frequency of iron deficiency anemia was found in 40 (42.1%) patients.

Conclusion: According to our findings, a substantial increase in iron deficiency anaemia was seen in helicobacter pylori-infected adults, the majority of whom were female.

Keywords: H.pylori infection, Iron Deficiency Anemia (IDA)

INTRODUCTION

A long-term bacterial illness known as H. Pylori, it is widespread in the world's poorest regions. According to study, half of persons infected with H. Pylori have it in their stomachs. In developing countries, variations in its incidence have been related to a range of characteristics, including age, geography, and socioeconomic status. There are millions of people living with H. Pylori infection in different parts of the globe. [1] If unattended, it may develop into a chronic condition. It's most common while a child is still a baby. [2] As a result of this infection's lack of symptoms in the vast majority of people, it was formerly thought H. Pylori strains were neither hazardous or even beneficial [3] and only a tiny fraction of adults were affected. To infect the stomach's mucosal cells, the bacterium Helicobacter pylori uses a gram-negative, microaerophilic, curled shape. Humans[4-6] and other primates are required hosts for this parasite. Most individuals have Helicobacter pylori, but only about a fifth of those persons develop the associated clinical illness. [7]

Different diagnostic approaches are available for detecting H. Pylori infection [8], [7,9]. Today, patients may choose from a variety of testing techniques, including urea breath test (UBT), Rapid Urease Test (RUT), biopsy with histopathology, and cultures. Isolation of bacteria from stomach biopsies remains the most accurate way for determining the presence of an illness. Researchers showed that 61 (65 percent) of the patients examined and 66 (70 percent) were infected with H. Pylori, whereas 14C UBT was employed to help diagnose in 63 (63 percent) (67 percent). Compared to histology, UBT was 93% accurate, with a 99% positive predictive value and an 84% negative predictive value [9]

It has recently been recommended that IDA patients be tested for H. pylori infection and given treatment [10,11]. Most of the research, which included children, teens, and middle-aged adults, led researchers to this conclusion. H. pylori therapy for the elderly has not yet been agreed upon or recommendations produced. Because of the absence of data, researchers were unable to conduct in-depth studies on anaemia and iron storage in the elderly. Among older female aspirin users, Kaffes et al. found

that H. pylori infection was associated with decreased ferritin levels, suggesting that H. pylori infection may impact iron storage [12]. It was shown that even though some older people with no symptoms had anti-HP antibodies, their nutritional indicators were unchanged. H. pylori infection in the elderly has not been linked to anaemia as of yet, according to the latest research. In less developed nations, H. pylori infection rates have been shown to rise with age [13,14]. H. pylori infection and anaemia in the 85+ population is significant because of the deterioration in physical and cognitive capacities and a lack of social support in this elderly, which makes medical choices difficult. Deaths in this group have been associated to anaemia [15].

IDA (iron deficiency anaemia) is a frequent complication of Helicobacter pylori infection, and the goal of this research is to find out how prevalent it is.

MATERIAL AND METHODS

This prospective/cross-sectional study was conducted in BHU 28 GB Jaranwala and comprised of 95 patients. All patients provided written informed permission that included information such as their age, gender, BMI, educational level, and place of residence. Iron supplementation for 30 days, erythropoietin injection for at least 30 days, overt/occult gastrointestinal haemorrhage and malnutrition, as well as recent hospitalizations due to acute infections were all excluded from the study.

In the beginning, only those patients who presented to the gastroenterology department complaining of dyspepsia and in dire need of an upper GI endoscopy were considered. Clinical history and physical findings were documented on the standard data sheet. Antibiotic or bismuth compound-treated patients were urged to get an endoscopy at least two weeks after ending their medications to monitor their progress. Informed consent was obtained from all of the patients who had upper gastrointestinal endoscopy and biopsy following a detailed discussion. Gastroenterology Department at BSMMU used an Olympus forward-looking video endoscope to perform endoscopy on patients under anaesthesia with topical lignocaine. Endoscopic atrophic or erosive gastritis patients were included in the study. As

part of the endoscopic procedure, a biopsy sample from the antrum of the patient's abdomen was taken. After a fast urease test (CLO) on biopsy tissues to identify H. pylori, the test medium changed colour from straw to pink or reddish for up to 24 hours.

Blood samples from the participants were used to test their levels of serum iron, transferrin saturation, ferritin, and total iron-binding capacity (TIC). A urea breath test, stool antigen testing, a fast urease test, or histopathology may diagnose H. pylori infection. Complete data was analysed using SPSS 22.0 version. Lab results were analysed using the mean standard deviation (MSD).

RESULTS

Among 95 patients, 57 (60%) were females and 38 (40%) were males.(fig 1)

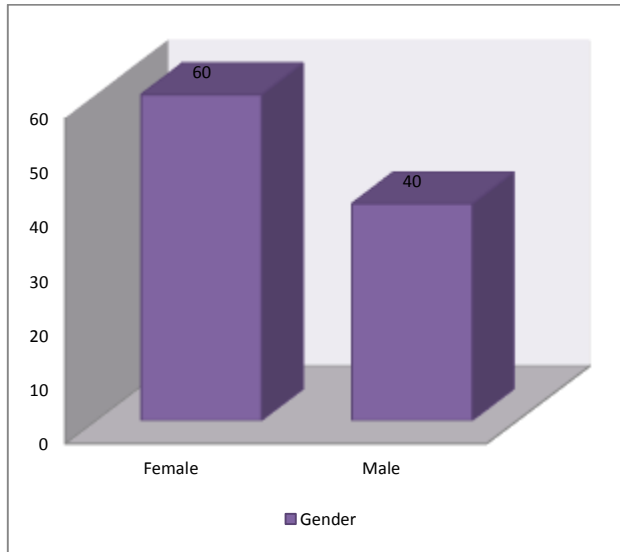


Figure 1: Distribution of gender among enrolled cases

Mean age of the patients 33.41±8.44 years with mean BMI 25.09±7.31 kg/m². Most of the cases were illiterate and were from rural areas. 55 (57.9%) cases had poor socio-economic status.(table 1)

Table 1: Patients characteristics and demographics

Characteristics	Frequency	Percentage
Mean age (years)	33.41±8.44	
Mean BMI (kg/m ²)	25.09±7.31	
Residency		
Rural	58	61.1
Rural	37	38.9
Education Status		
Yes	61	64.2
No	34	35.8
Socio-economic status		
Poor	55	57.9
Good	40	42.1

The mean level of hemoglobin was 12.1±3.11 (g/dl), mean serum iron level was 49.5±8.31 (ug/dl) and mean serum ferritin level was 121.6±31.56 (ng per ml). (table 2)

Table 2: Laboratory findings of enrolled cases

Variables	Mean	Std
Clinical Findings		
Mean hemoglobin (g/dl)	12.1	3.11
mean serum iron (ug/dl)	49.5	8.31
mean serum ferritin (ng/ml)	121.6	31.56

Frequency of iron deficiency anemia was found in 40 (42.1%) patients.(fig 2)

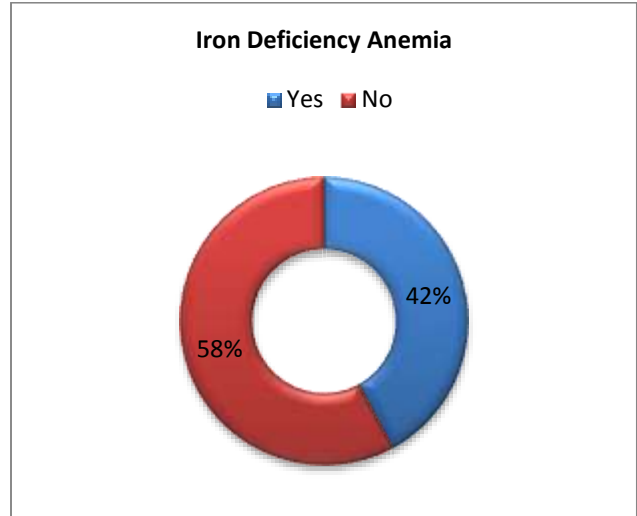


Figure 2: Patients with H.pylori infection are more likely to have iron deficiency

DISCUSSION

Though epidemiological and clinical studies have shown a link between the prevalence of H. pylori infection and an increased incidence of IDA, the underlying cause of the disease is still unknown. Strains of H. pylori recovered from patients with IDA displayed rapid cell growth and enhanced Fe ion uptake compared to strains recovered from patients with non-IDA, according to the results of this study. These findings lead us to believe that specific H. pylori strains may be a risk factor for IDA. H. pylori, like other bacteria, requires Fe as a nutrient source. Fluorescent strains of H. pylori absorb Fe ions and multiply in the presence of them because of their improved ability to take up iron. In addition, huge levels of Fe ions accumulate in H. pylori cells in faeces. H. pylori strains with increased Fe consumption and excretion may lead to Fe shortage in the host and the onset of iron deficiency anaemia (IDA). As a result, the specific strains of colonising H. pylori may have a role in the development of IDA in addition to host and environmental variables.[16]

Half of the population is infected with H. pylori between the ages of 35 and 70, while about 10% are afflicted between the ages 18 to 30 [17]. Human pylori infections occur most often in children under the age of one year in all countries [18]. Chronic H. pylori infections in the elderly have been linked to anaemia [19], in part because of the increased risk of gastrointestinal mucosal lesions in this age group."

In the current research, 95 people of both sexes, ranging in age from 20 to 70, took part. Mean age of the patients 33.41±8.44 years with mean BMI 25.09±7.31 kg/m². Most of the cases were illiterate and were from rural areas. 55 (57.9%) cases had poor socio-economic status. The results of the present investigation were in line with those of previous studies. [21,22] Anemia is a frequent problem in impoverished nations, and iron deficiency is the most common cause. [23,24] While some of the causes for this disorder's prevalence in our culture are well-known and explored, many others are novel and untested. The majority of people infected with H. pylori do not develop ulcers or cancer in their stomachs, despite the fact that these conditions may lead to bleeding and iron shortage. It is common for them to suffer from chronic gastritis without gastrointestinal bleeding. [25] Some IDA instances remain unsolved even after thorough investigation. Studies on H. pylori's significance in other disorders, such as iron deficiency anaemia, have lately gained in importance.

In our study The mean level of hemoglobin was 12.1 ± 3.11 (g/dl), mean serum iron level was 49.5 ± 8.31 (ug/dl) and mean serum ferritin level was 121.6 ± 31.56 (ng per ml). Non-malignant blood cancers represented for just 6 percent of all anaemia occurrences in older people [25]. Other common reasons were chronic inflammation, nutritional deficiencies, chronic diseases, and hemoglobinopathies. Chronic inflammation is one of the most common causes of anaemia in the elderly. This kind of anaemia is often mild to moderately hypochromic and normocytic. Immune responses may be responsible for persistent inflammation-induced anaemia [26]. Serum ferritin is linked to the body's mobilizable iron stores and may be utilised as a measure for iron storage, according to the study. To maintain normal haemoglobin levels until the body's iron supplies are exhausted. Because of this, haemoglobin levels may be normal even if the body has very little or no iron stores.

Frequency of iron deficiency anemia was found in 40 (42.1%) patients.[27,28] DA has been reported in a significant number of patients with atrophic body gastritis, and 61 percent of those patients were found to have H. Pylori infection, according to a prior research.[29] Iron deficiency anaemia in otherwise healthy normal premenopausal females may be caused by other conditions. Menstrual blood loss, pregnancy-induced increased iron needs, nutritional deficiency, and breast-feeding are the primary culprits.[30] A clinical and investigative examination of the most likely causes of iron shortage or anaemia found that H. pylori infection was substantially linked with decreases in serum ferritin, MCV, and MCH. We found a strong correlation between anaemia and this condition, though. As a result of the aforesaid results, H. pylori infection should be sought out and treated in individuals with unexplained anaemia.

CONCLUSION

According to our findings, a substantial increase in iron deficiency anaemia was seen in helicobacter pylori-infected adults, the majority of whom were female

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