



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1040825>Available online at: <http://www.iajps.com>

Research Article

**FREQUENCY OF ANEMIA IN PATIENTS WITH HELICOBACTER  
PYLORI INFECTION PRESENTING TO TERTIARY CARE HOSPITAL****Dr. Abdul Ghaffar Dars<sup>1\*</sup>, Dr. Gordhan Soothar<sup>2</sup>, Dr. Nand Lal Seerani<sup>3</sup>**<sup>1</sup>MBBS, FCPS, Senior registrar medicine department of Bilawal medical college LUMHS  
Jamshoro<sup>2</sup>MBBS, FCPS, Assistant professor Muhammad Medical College Mirpur-Khas<sup>3</sup>MBBS, FCPS, Senior registrar, Gastroenterology department LUMHS Jamshoro**Abstract:**

**Objectives:** To determine the frequency of anaemia in patients presenting with *Helicobacter pylori* gastritis at Jinnah Postgraduate Medical Centre Karachi.

**Material and methods:** This descriptive cross sectional study has been conducted in General Medicine ward Jinnah Postgraduate Medical Centre, Karachi, with six months duration. All the patients with *H pylori* gastritis diagnosed on biopsy, age between 18-65 years, duration of symptoms of more than 6 months as (epigastric pain, epigastric burning, abdominal bloating, nausea, vomiting and confirmed on biopsy as *H pylori* gastritis), willing to participate in the study either gender were included in the study. For the evaluation of anaemia the laboratory investigations were advised complete blood count and serum iron profile. Selection criteria were followed strictly to control confounders.

**Results:** A total of 115 patients presenting with *helicobacter pylori* gastritis at Jinnah Postgraduate Medical Centre (JPMC) were enrolled in this study. The mean age of patients was 39.20±14.64 years. Males were 70 (60.9%). Mean time duration of symptoms of patients was 8.21 ± 3.66 months. The mean hemoglobin% was 12.95 ± 2.10 mg/dL, mean serum ferritin was 63.90 ± 9.02 63.90±9.02 µg/d±L, Mean of MCV was 87.53 ± 12.48. Over all frequency of anaemia in patients presenting with *helicobacter pylori* gastritis, was 29(25.2%). Following by iron deficiency anaemia was in 16 cases, pernicious anaemia in 7 cases, while both type of anaemia was found in 6 cases. No significant difference was found according to gender in anemia in *H-pylori* infected patients P- value = 0.87.

**Conclusion:** In *H pylori* gastritis patients' anemia was present in one forth of cases (25%), among them commonest was iron deficiency anemia 13%.

**Key words:** *H. Pylori* infection, gastritis, iron deficiency,

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Please cite this article in press as Abdul Ghaffar Dars et al, *Frequency of Anemia in Patients with Helicobacter Pylori Infection Presenting To Tertiary Care Hospital*, Indo Am. J. P. Sci, 2017; 4(11).

**INTRODUCTION:**

*Helicobacter pylori* (*H. pylori*) are spiral gram negative bacterium which colonizes the mucosa of stomach. It is estimated that about two third of world's population is infected with this organism<sup>1</sup> and it is responsible for > 80 % cases of chronic gastritis and peptic ulcer diseases throughout the world.<sup>2,3</sup> *H. pylori* can infect any age and is more commonly seen in patients of low socio-economic status in developing countries.<sup>4</sup> In Pakistan the infection rate of *H. pylori* is 83% in general population.<sup>5</sup> It is estimated that in Pakistan 80% of infants acquire this infection within their first month of life.<sup>6</sup> *H. pylori* is responsible for 53% of duodenal ulcers and anaemia in upto 14% patients in Pakistan.<sup>4,6</sup> *H. pylori* impairs the normal secretion of hydrochloric acid, provoking achlorhydria in infected patients. Resulting increased pH and decreased concentration of ascorbic acid in stomach leads to malabsorption of many micronutrients including iron from gastric mucosa.<sup>7</sup> Other suggested pathogenesis is the increased iron loss from micro bleeding, and its utilization by *H. pylori*.<sup>8</sup> This leads to iron deficiency anaemia. WHO statistics show that 1.62 billion people worldwide suffer from anaemia worldwide, 50% of whom are affected by iron deficiency anaemia (IDA).<sup>2,9</sup> Iron deficiency anaemia has been observed even in those *H. pylori* infected persons who do not have ulcers or cancer. It is suggested that eradication of *H. pylori* improves the absorption of iron, and produce more rapid and complete clinical responses in these patients.<sup>10,11</sup> Despite of highly sensitive and specific diagnostic techniques and effective therapies, *H. pylori* infection is highly prevalent in Pakistan so will be the prevalence of anaemia in these patients. Upon thorough literature search there was only limited data available to ascertain the burden of anaemia in *H. pylori* patients. The available data is on selected groups of patients (only those who underwent upper GI endoscopy) and not a general presentation of all patients presenting with *H. pylori* infection. This study is based on the rationale that present the magnitude of anemia in all patients presenting with *H. pylori* infection.

**MATERIAL AND METHODS:**

**Study Setting:** General Medicine ward-7, Jinnah Postgraduate Medical Centre, Karachi

**Duration of Study:** Six months

**Study Design:** Descriptive cross sectional study

**Sample Size:** The expected proportion of iron deficiency anaemia in *H. pylori* patients was taken as 12.14%<sup>15</sup>, margin of error as 6% and confidence level

of 95% and using least proportion formula, the sample size is  $114 \approx 115$ .

**Sample selection:****Inclusion criteria:**

- Patients of both gender with *H. pylori* gastritis diagnosed on biopsy
- Patients with age between 18-65 years
- Patients of any socio-economic strata
- Duration of symptoms of more than 6 months
- Patients not having psychological disorder like depression, schizophrenia
- Willing to participate in the study
- Non smokers

**Exclusion criteria:**

- Pregnancy
- Patients who had laboratory evidence of malaria in previous one month
- Chronic illnesses like chronic liver disease, liver cirrhosis, chronic renal failure, tuberculosis
- Blood disorders like thalassaemia, acute leukemia, haemoglobinopathies, clotting disorders
- Gastric carcinoma or other cancer
- Operated upon for gastrectomy, jejunostomy, ileostomy and colostomy
- Patients who are on radiotherapy, chemotherapy
- Patients taking medicine causing folic acid deficiency like Gabapentin, Methotrexate, Trimethoprim and Pyrimethamine.

**Data Collection Procedure**

The Patients who present to OPD of medical ward-7 with any one or more of the complaints of epigastric pain, epigastric burning, abdominal bloating, nausea, vomiting and confirmed on biopsy as *H. pylori* gastritis were asked to participate in the study. Those who fulfill the inclusion criteria were asked for written consent for the study. Consenting patients were enrolled in the study. Treatment was given to these patients according to the available standard therapies practiced at the institution. The researcher will gather data on prescribed questionnaire from the patients. The data were taken on demographic variables like name, age, gender and address. Duration of symptoms were noted. For the evaluation of anaemia (outcome variable) the following laboratory investigations were advised complete blood count and serum iron profile. Selection criteria were followed strictly to control confounders. The data was analyzed after entering it into SPSS-17.

**RESULTS:**

A total of 115 patients presenting with helicobacter pylori gastritis at Jinnah Postgraduate Medical Centre (JPMC) were enrolled in this study. The mean age of patients was  $39.20 \pm 14.64$  years. According to distribution of gender in overall study population, males were 70 (60.9%) and females were 45 (39.1%). On distribution of socio economic status, low socio economic status in 54 (47%) and high socio economic status was 61 (53%) shown in **Table 1**. The mean time duration of symptoms of patients was  $8.21 \pm 3.66$  months. The mean hemoglobin% was  $12.95 \pm 2.10$  mg/dL, mean serum ferritin was  $63.90 \pm 9.02$   $63.90 \pm 9.02$   $\mu\text{g/d+L}$ , mean of mean corpuscular volume (MCV) was  $87.53 \pm 12.48$  **Table 2**.

Over all frequency of anaemia in patients presenting with helicobacter pylori gastritis, was 29(25.2%). Following by iron deficiency anaemia was in 16 cases, pernicious anaemia in 7 cases, while both type of anaemia was found in 6 cases. **Table:3**

No significant difference was found according to gender in anemia in H-pylori infected patients (Chi square test statistic = 0.023; P- value = 0.87). Comparison of frequency of anaemia between time duration of symptoms, in (5 – 10) month group was 5 (17.2%), in (11 – 15) months group was 17 (58.6%) and in (16 – 20) months group was 7 (24.1%). This comparison found statistically significant (Chi square test statistic = 80.32; P- value = <0.001). **Table 4**.

**Table 1: basic characteristics of study population n=115**

Baslline Characteristics	Number	Percent
<b>Age groups</b>		
17 – 30	41	35.7%
31 – 45	32	27.8%
> 46	42	36.5%
<b>Gender</b>		
Male	45	39.1%
Female	70	60.9%
<b>Socioeconomic status</b>		
Poor	54	47.0%
High class	61	53.0%

**Table 2: Mean level of anemia and time duration of symptoms of study n= 115**

ANEMIA AND TIME DURATION	MEAN $\pm$ SD
Time duration of symptoms	$8.21 \pm 3.66$ month
Hemoglobin	$12.95 \pm 2.10$ mg/dL
Seum Ferritin	$63.90 \pm 9.02$ $\mu\text{g/d+L}$
Mean Corpuscular Volume (MCV)	$87.53 \pm 12.48$

**Table 3: Frequency of anemia of study in population n= 29**

TYPES OF ANEMIA	frequency	%
IRON DEFICIENCY ANEMIA	16	13.9%
PERNICIOUS ANEMIA	07	6.1%
BOTH ANEMIA	06	5.2%
<b>Total (Over all anemia)</b>	<b>29</b>	<b>25.2%</b>

**Table 4: distribution of anemia according To gender n=115**

ANEMIA	Not ANEMIA		ANEMIA	
GENDER	N	%	N	%
FEMALE	34	39.5	11	37.9
MALE	52	60.5	18	62.1
Chi square test statistic = 0.023; P- value = 0.87				

**Table 5: Distribution of Anemia According To Duration of Symptoms (MONTHS) n=115**

ANEMIA	Not ANEMIA		ANEMIA	
DURATION OF SYMPTOMS	N	%	N	%
5 - 10	84	97.7	5	17.2
11 - 15	1	1.2	17	58.6
16 - 20	1	1.2	7	24.1
Chi square test statistic = 80.32; P- value = <0.001				

**DISCUSSION:**

Iron deficiency and Iron deficiency anemia are important health conditions with important health consequences regarding reproduction, immunity, work performance, and possibly cognitive development; it is a simple result of an imbalance between iron loss and absorption.<sup>12</sup> Helicobacter pylori associated gastritis has emerged as a potential cause of iron deficiency anemia that is unresponsive to iron therapy.<sup>13</sup> Our study results also support that H-pylori infection is associated with ID, this relation is also supported by many studies with different explanation of the mechanisms by which H.pylori affect iron absorbance.

A recent study in the American Journal of Epidemiology<sup>14</sup>, looking at data for 7,462 people, reveals that H. pylori might also contribute to one of the most common nutritional deficiencies in the world. Iron deficiency affects mainly older infants, young children, adolescents, and pre-menopausal women. Our bodies need iron to manufacture hemoglobin, a substance in red blood cells that carries oxygen to the cells via the lungs. When insufficient iron is present, the body produces smaller and fewer red blood cells, resulting in less oxygen fuelling the body. This can cause impairments in immune, cognitive, and reproductive body functions,

and in work performance. The biochemical mechanism whereby H. pylori cause iron deficiency and anemia is unknown. However, the researchers suggest that the reduced iron could be due one or more of these factors:

- Use of iron by the bacteria to reproduce,
- Micro-bleeding resulting from *H. pylori* attachments to the stomach wall, and/or
- Decreased iron absorption due to an affect of *H. pylori* on the stomach.

Researchers suggest that H. pylori are the second leading cause of communicable iron deficiency, next to worm infestation. H. pylori infection raised the risk of iron deficiency by 40% and of IDA by 160%. This was after ruling out patients with peptic ulcer disease – a known contributor to anemia due to blood loss.

A study including 2080 adult patients in Alaska, where there is a high prevalence of H.pylori, have suggested a significant correlation between H.pylori–IgG positivity and low serum ferritin levels.<sup>15</sup> They have suggested that ulceration causes bleeding which leads to IDA and this result was confirmed by our

own study. The blood loss in chronic gastritis, and bleeding from duodenal or gastric ulcers related to *H. pylori* infection, plays an important role in the development of iron deficiency in adults. In response to *H. pylori* chronic gastric inflammation, the epithelial cells in the mucosa are damaged, leading to detachment and apoptosis. In the absence of bleeding lesions, the possible mechanisms by which *H. pylori* is involved in the development of IDA remain unclear. Moreover, Boggs reviewed that eradication of *H. pylori* with a triple therapy consisting of lansoprazole, clarithromycin, and amoxicillin for 14 days leads to serum ferritin levels elevation significantly in both IDA and ID groups without iron supplements, indicating that complete recovery of iron deficiency and iron deficiency anemia can be achieved with the treatment of *H. pylori* infection.<sup>16</sup>

### CONCLUSION:

Over all frequency of anemia in patients with *H. pylori* gastritis was found to be 25%, among them iron deficiency anemia was most common 13%. High index of suspicion for iron deficiency should be exercised in these patients to avoid the hematological and neurological complications.

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