

Iron deficiency anemia in selected patients at Vlora Regional Hospital, Albania

Krenar Malaj¹, Valentina Baka², Mimoza Bega³, Majlinda Gjika⁴

¹Laboratory Director, Vlora Regional Hospital, Vlora, Albania;

²Laboratory of Vlora Polyclinic, Vlora, Albania;

³Gastrohepatology Department, Vlora Regional Hospital, Vlora Albania;

⁴Hematology Department, Vlora Regional Hospital, Vlora, Albania.

Corresponding author: Krenar Malaj, MD

Address: Vlora Regional Hospital, Vlora, Albania;

Telephone: +355692031814; E-mail: kmalaj3@yahoo.com

Abstract

Aim: This study examined the levels of anemia, severity, and improvement of various blood parameters following treatment for *Helicobacter pylori*.

Methods: The study involved 75 patients presented at the Gastrohepatology/Hematology Ward at the Regional Hospital in Vlora, examined at the laboratory of this hospital during the period January-December 2012.

Results: Of the 75 patients examined, 76.9% (N=30) resulted positive for *Helicobacter pylori*, with 40% of the total (N=30) exhibiting symptoms of anemia.

Conclusion: *Helicobacter pylori* is one of the many causes of anemia, but responds well to proper medical treatment, resulting in quick improvement of blood parameters. We recommend implementation of serologic and other analysis for *Helicobacter pylori* as a component of routine hospital services.

Keywords: anemia, *Helicobacter pylori*, Vlora.

Introduction

Anemia is one of the most common pathologies encountered in daily medical practice, described by the World Health Organization (WHO) as being hemoglobin <120 g/l in females and <130g/l in males. There are a great number of factors which cause anemia, but the most commonly mentioned include: acute blood loss, hemolysis, or iron-deficiency anemia caused by chronic illnesses, which constitute the greatest percentage of anemia (1,2). There are various methods for classifying anemia, such as the number of erythrocytes, hematocrits, hemoglobin and, finally, based upon MCV (Median Corpuscular Volume), or the size of red blood cells and number of reticulocytes (3).

Beginning with the fact that massive blood loss causes anemia, and that the source of such loss must be identified, it is known that the most common loss is within the digestive system, and proper treatment results in patient improvement. However, in various studies where patients have not exhibited signs of gastrointestinal blood loss and/or endoscopic exam has resulted negative, the conditions which are most common include the morbid Coeliac or malabsorption (4,5). By comparison, the role of *Helicobacter pylori* in iron-deficiency anemia must be given greater consideration.

Helicobacter pylorus is a long bacterium with lophotrichous flagella in bent form, similar to the letter U. As with all other campylobacters, it is microaerophilic, found in the gastric mucous or gastric salts where there is no bacterial competition. There is morphological advantage in the movement of viscous gastric mucous. Locating of bacteria among epithelial cells of the mucous ensures hemic

increase and favors multiplication. Throughout this multiplication several factors are released which are damaging for the mucous cells.

Several different methods exist for identification of *Helicobacter pylori*. Our study employed serum diagnosis, the Elisa method – utilizing an Abbot Commander we identified IgG anti HP (6).

Objective

The objective of this study was to observe findings of *Helicobacter pylori* in individuals under study, the level of anemia caused by gastritis from *Helicobacter pylori*, and improvement of blood parameters following treatment.

Methods

This study involved 75 persons (30 males and 45 females; 40% and 60%, respectively) treated in the Gastrohepathology/ Hematology Ward of the Regional Hospital in Vlora.

Comparative examinations were conducted for HGB, HCT, MCV, ferritins, and serum iron, plus examinations for *H. pylori* IgG anti HP.

Anemia was categorized as (a) mild-to-moderate when Hb levels among males registered 90-120 g/l, whereas for females the range was 80-110 g/l; or (b) acute anemia if the level of Hb was below 70 g/l for males and 80 g/l for females.

Results and discussion

Of the 75 persons examined, 52% (N=39) were positive for IgG anti-HP. Of these, 40% of the total, or 76.9% of those who resulted iron deficient (N=30), manifested symptoms associated with anemia. Table 1 contains the resulting values, measured by Micros 60 cell counter and ECO auto analyzer.

Table 1. Findings from the blood analysis among 30 persons who were iron-deficient

No.	Erythrocytes	Hb	Hct	MCV	MCH	Serum iron	Ferritine
1	4.120 000	11,0	33,0	64	19.6	48	64
2	3.700 000	9.6	28.8	72	26.1	35	14
3	5.120 000	10,0	30,0	58	19.4	41	36
4	4.136 000	10.7	32.1	70	26.1	46	20
5	3.20 000	8.9	26.7	80	27.9	28	12
6	4.100 00	10.9	32.7	73	26.2	48	27
7	3.810 000	10.6	31.8	69	25.1	45	19
8	3.940 000	10.4	32.1	76	26.2	43	39
9	4.810 000	9,0	27,0	71	26,0	28	16
10	2.916 000	8,0	24,0	81	27.9	19	11
11	5.90 000	9.1	27,3	54	18.1	32	74
12	3.640 000	10.2	30.6	75	26.3	41	29
13	4.150 000	8.8	26.4	60	21.5	29	34
15	3.10 000	9.1	27.3	75	26.4	30	22
16	4.350 000	11,3	33,9	66	20.4	43	21
17	3.700 000	10.8	32.4	77	26.4	47	34
18	4.160 000	9.5	28.5	72	26,0	34	26
19	3.159 000	9.2	27.6	61	24.8	31	14
20	4.140 000	10.6	31.8	64	24.3	45	19
21	5.110 000	9.4	28.2	69	24.3	36	55
22	4.240 000	9.9	29.7	74	26,2	40	68
23	3.817 000	10.5	31.5	66	22.5	44	17
24	3.990 000	10.8	32.4	73	26.1	47	29
25	3.110 000	8.7	26.1	62	21.9	26	15
26	4.20 000	10.3	30.9	79	26.5	42	50
27	5.16 000	9.6	28.8	65	23.1	35	41
28	4.12 000	9.9	29.7	76	26.1	39	25
29	3.461 000	10.1	30.3	70	25.8	42	27
30	3.27 000	8.6	25.8	64	25.1	26	18

These 30 cases, from a selected pool of 75, were positive for *Helicobacter pylori* (IgG anti HP, ELISA method, with Abbot Commander equipment).

Norms and standards of analysis

RBC

$$\bar{X} = 3.880.000 \quad \sigma = 1.023807 \quad \bar{X} \pm \sigma \quad 2.857.000 \div 4.903807$$

Normal values 4.200.000 ÷ 5.800.000

P < 0.05 Significant difference

Hb

$$\bar{X} = 9.8 \quad \sigma = 0.9 \quad \bar{X} \pm \sigma \quad 8.9 \div 10.8$$

Normal values 12 – 16.5

P < 0.001 Significant difference

HCT

$$\bar{X} = 29.5 \quad \sigma = 2.5 \quad \bar{X} \pm \sigma 27.0 \div 32$$

Normal values 38 ÷ 50 %

P<0.05 Significant difference

Ferritine

$$\bar{X} = 30 \quad \sigma = 17 \quad \bar{X} \pm \sigma 13 \div 47$$

Normal values 20 ÷ 220

P<0.01 Significant difference

Serum iron

$$\bar{X} = 38 \quad \sigma = 8 \quad \bar{X} \pm \sigma 30 \div 46$$

Normal values 50 ÷ 165 mg/dl

P<0.01 Significant difference

Conclusions

Findings of this study suggest the following conclusions:

- Comparison of other factors against *Helicobacter pylori* and resulting gastritis play a significant role in iron-deficiency anemia, as found in 40% (N=30) of subjects in this study.
- Proper treatment against *Helicobacter pylori* results in a rapid improvement of blood values (7).
- Serological examinations and other means for detection of *Helicobacter pylori* should become routine procedures in all hospital services (8).

References

1. Sugiyama T, Tsuchida M, Yokota K, Shimodan M, Asaka M. Improvement of long-standing iron-deficiency anemia in adults after eradication of *Helicobacter pylori* infection. Intern Med 2002; 41:491-494.
2. Perez – Perez GI. Role of *Helicobacter pylori* infection in the development of pernicious anemia. Clin Infect Dis 1997; 25:1020-1022.
3. Milman N, Rosenstock S, Andersen L, Jørgensen T, Bonnevie O. Serum ferritin, haemoglobin, and *Helicobacter pylori* infection in Danish adults. Gastroenterology 1998; 115:268-274.
4. Dhaenens L, Szczebara F, Husson MO. Identification, characterization and immunogenicity of the lacto ferritin-binding protein from *Helicobacter pylori*. Infect Immunol 2012; 65:514-518.
5. Marignani M, Angeletti S, Bordi C, et al. Reversal of long-standing iron deficiency anaemia after eradication of *Helicobacter pylori* infection. Scan J Gastroenterol 2011; 32:617-622.
6. Annibale B, Marignani M, Monarca B, Antonelli G, Marcheggiano A, Martino G, Mandelli F, Caprilli R, Delle Fave G. Reversal of iron deficiency anemia after *Helicobacter pylori* eradication in patients with asymptomatic gastritis. Ann Intern Med. 1999; 131:668-672.
7. Lee JE, Kim SK. Effect of *Helicobacter pylori* eradication on sideropenic refractory anaemia in adolescent girls with *Helicobacter pylori* infection. Acta Paediatr 2000; 89:154-157.
8. Nakao K, Imoto I, Ikemura N, et al. *Helicobacter pylori* infection and lactoferrin level in gastric mucosa as a marker of gastric inflammation (abstract). Dig Dis Week, 2011.