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Proceedings of the 13th  
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**SCIENCE AND PRACTICE:  
IMPLEMENTATION TO  
MODERN SOCIETY**

Manchester, Great Britain  
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## MEDICINE AND PHARMACY

# The role of some external factors in the development of iron deficiency anemia associated with *Helicobacter pylori*

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**Abstract.** It has been shown in several scientific works that *Helicobacter pylori* is not distributed uniformly in different countries of the world and that ethnic, geographical factors, genetic predisposition, sanitary-hygienic condition in the region and family, diet play an important role in its development. In this article, the level of *Helicobacter pylori* antibodies in the blood of patients was analysed in relation to on a number of external factors, in particular, harmful habits (cigarette smoking and nas consumption), eating habits, the presence of central water supply and sewerage at the place of residence. Moreover, it has been confirmed that negative factors cause an increase in the level of *Helicobacter pylori* antibodies in the blood.

**Keywords:** *Helicobacter pylori, iron deficiency anemia.*

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*Helicobacter pylori* is one of the most common infections in the world, found in about 50% of the population in developed countries and 90% in developing countries [7]. According to scientific observations, this Gram-negative bacillus is most often detected among people living on the African continent [4, 6, 12] which this is due to the fact that they are infected from early childhood.

In Western European countries and Australia, the infection is relatively rare, occurring in 30-40% of the population [5]. In the Russian Federation, infection is detected in 50-80% of the population, and its prevalence

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differs somewhat in different regions of the country. In Novosibirsk and St. Petersburg, these numbers are 80–95% [3, 8, 10], 88% in Moscow [11], 78–88% in Yakutia [9].

*Helicobacter pylori* is widespread in Uzbekistan as well, and 80% of patients with gastrointestinal diseases have cag positive strains. In terms of regions, the highest number was found in Khorezm region (79%) and the lowest in Tashkent city (60%) [1, 13].

Some authors believe that the difference in prevalence of gastroduodenal diseases with *H. pylori* among people living in different regions is related to the different distribution of its highly pathogenic strains [4].

According to Professor M.M. Karimov and co-authors, the cagA positive strain of *H. pylori* is common among the population in all regions of Uzbekistan. In Khorezm region and Karakalpakstan VacA s1m1 strain was more prevalent, while in Tashkent and Namangan it was VacA s1m2 strain. In gastritis, Cag + VacA s1 and Ice A1 strains were prevalent, in ulcer disease Cag A+VacA s1, vacA m2, Ice A 1,2 strains were recorded more often [1,2].

The studied literature confirms that a number of external and internal factors play an important role in determining the severity and development of gastroduodenal diseases. Although the spread of *H.pylori* strains and its genetic characteristics have been studied in Uzbekistan, the external factors (socio-economic, sanitary-hygienic conditions, harmful habits, etc.) have not been paid enough attention. Their study is important for practical medicine.

**Aim of the study:** Investigation of some extrinsic factors predisposing to *Helicobacter pylori*-associated iron deficiency anemia.

**Materials and methods of the study:** For the study 60 patients with iron deficiency anemia, who complained of stomach and duodenal diseases, and had elevated *Helicobacter pylori* antibodies were selected. They were treated in the Multidisciplinary Medical Center of Samarkand region. *H. pylori* antibodies were measured using immunoenzymatic method. They were divided into three groups based on the severity of anemia. The first group consisted of 20 patients (6 men and 14 women, average age  $45.35 \pm 2.7$  years) with mild ( $Hb > 90$  g/l) iron deficiency anemia, the second group consisted of 20 patients (3 men and 17 women, average age  $44.65 \pm 2.42$  years) with moderate ( $Hb$  70–90 g/l) anemia, and the third group consisted of 20 (2 men and 18 women, average age  $46.35 \pm 2.5$ )

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patients diagnosed with severe ( $Hb < 70$  g/l) iron deficiency anemia.

In all patients, a careful anamnesis was collected in order to study the connection between some external factors (cigarette smoking, nas (granular or powdered tobacco dip) consumption, diet, centralized water supply and sewerage) and *H.pylori*.

**Analysis of the study results.** A carefully gathered patient histories revealed that 20% of patients with mild iron deficiency anemia smoked cigarettes or consumed nas. In the remaining 80% of the patients these harmful habits were not detected. In them, *H. pylori* antibodies in blood serum were on average  $26.9 \pm 1.2$  U/ml and  $22.6 \pm 1.3$  U/ml, respectively, and the difference between them was statistically reliable ( $p < 0.05$ ).

57% of the patients did not follow the daily diet while the remaining 43% followed it. When *H.pylori* antibodies were measured in their blood serum, it was  $26.2 \pm 1.2$  U/ml in patients who did not follow the diet, and  $21.9 \pm 1.3$  U/ml in those who did, and the difference between them was significant ( $p < 0.05$ ).

Moreover, *H. pylori* antibody indicators were studied in relation to the availability of centralized water supply and sewerage in the residences of the patients in our study. The following results were found: The share of patients without centralized water supply and sewerage was 70% and 76.7%, respectively. In these patients, *H.pylori* antibodies in blood serum were equal to  $27.2 \pm 1.2$  U/ml and  $27.6 \pm 1.2$  U/ml, respectively. In contrast, those with centralized water supply and sewerage made up 30% and 23.3% of the group, respectively. In these patients, *H.pylori* antibody levels were  $22.4 \pm 1.3$  U/ml and  $22.7 \pm 1.3$  U/ml, respectively. The difference between groups of patients with and without centralized water supply and sewerage was reliable ( $p < 0.01$  and  $p < 0.01$ ).

27% of patients with moderate iron deficiency anemia smoked cigarettes or consumed nas. In the remaining 73% of the patients these harmful habits were not detected. In them, *H. pylori* antibodies in blood serum were on average  $28.1 \pm 0.4$  U/ml and  $25.6 \pm 1.1$  U/ml, respectively, and the difference between them was statistically reliable ( $p < 0.05$ ).

73.3% of the patients did not follow the daily diet while the remaining 26.7% followed it. When *H.pylori* antibodies were measured in their blood serum, it was  $27.6 \pm 0.4$  U/ml in

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patients who did not follow the diet, and  $25.3 \pm 1.1$  U/ml in those who did, and the difference between them was significant ( $p < 0.05$ ).

Additionally, *H. pylori* antibody indicators were studied in relation to the availability of centralized water supply and sewerage in the residences of the patients of this group. The following results were found: The share of patients without centralized water supply and sewerage was 70% and 76.7%, respectively. In these patients, *H. pylori* antibodies in blood serum were equal to  $29.2 \pm 0.4$  U/ml and  $30.4 \pm 0.4$  U/ml, respectively. In contrast, those with centralized water supply and sewerage made up 30% and 23.3% of the group, respectively. In these patients, *H. pylori* antibody levels were  $26.2 \pm 1.1$  U/ml and  $26.7 \pm 1.3$  U/ml, respectively. The difference between groups of patients with and without centralized water supply and sewerage was reliable ( $p < 0.01$  and  $p < 0.001$ ).

10% of patients with moderate iron deficiency anemia smoked cigarettes or consumed nas. In the remaining 90% of the patients these harmful habits were not found. In them, *H. pylori* antibodies in blood serum were on average  $52.2 \pm 3.4$  U/ml and  $42.4 \pm 3.2$  U/ml, respectively, and the difference between them was statistically reliable ( $p < 0.05$ ).

86.6% of the patients did not follow the daily diet while the remaining 13.4% followed it. When *H. pylori* antibodies were measured in their blood serum, it was  $54.6 \pm 3.4$  U/ml in patients who did not follow the diet, and  $44.3 \pm 3.2$  U/ml in those who did, and the difference between them was significant ( $p < 0.05$ ).

When *H. pylori* antibody levels were measured in relation to the availability of centralized water supply and sewerage in the residences of the patients, the following results were found: The share of patients without centralized water supply and sewerage was 76.6% and 83.3%, respectively. In these patients, *H. pylori* antibodies in blood serum were equal to  $54.9 \pm 3.4$  U/ml and  $55.3 \pm 3.4$  U/ml, respectively. In contrast, those with centralized water supply and sewerage made up 23.4% and 16.7% of the group, respectively. In these patients, *H. pylori* antibody levels were  $43.2 \pm 3.2$  U/ml and  $44.1 \pm 3.2$  U/ml, respectively. The difference between groups of patients with and without centralized water supply and sewerage was reliable ( $p < 0.05$  and  $p < 0.05$ ).

The study of the effects of external factors to iron deficiency anemia showed the presence of a relationship

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between them and the severity of the disease, and accordingly, increased H.pylori antibodies in serum. This, in turn, confirms that there is a close connection between the factors (cigarette smoking, nas consumption, disregarding diet, lack of centralized water supply and sewerage), H. pylori and iron deficiency anemia.

Based on our analysis, we can come to the following conclusions:

1. Cigarettes and nas create ideal conditions for the growth of H.pylori and the occurrence of anemia by increasing the acidic environment in the stomach. Active awareness campaigns among the population against harmful habits is important in preventing H. pylori infection and related anemia.

2. In residential areas where there is no centralized water supply and sewerage, it is necessary to strictly follow the rules of personal hygiene, taking into account the fecal-oral transmission of H. pylori.

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