The role of some external factors in the development of vitamin B12 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 analyses 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:
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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 [2]. According to scientific observations, this Gram-negative bacillus is most often detected among people living on the African continent [9, 10, 11, 15].

In Western European countries and Australia, the infection is relatively rare, occurring in 30-40% of the population [6, 14]. In France, these figures are as low as 10.7% [8, 17]. In the Russian Federation, infection is detected in 50-80% of the population, and its prevalence differs somewhat in different regions of the country. In Novosibirsk and St. Petersburg, these numbers are 80-95% [3, 4, 5, 7], 88% in Moscow [13], 78-88% in Yakutia [10], 80% in the Yamal-Nenets Autonomous District [10], 85.4% of the population of Khakassia [12].

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%) [2, 16].

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 [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 vitamin B12 deficiency anemia.

**Materials and methods of the study:** For the study 60 patients with vitamin B12 deficiency anemia, who complained of stomach and duodenal diseases, and had elevated Helicobacter pylori antibodies were selected. They were treated in the departments of hematology and gastroenterology.
of 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 (5 men and 15 women, average age 37.4±2.3 years) with mild vitamin B12 deficiency anemia, the second group consisted of 20 patients (4 men and 16 women, average age 43.6±3.25 years) with moderate anemia, and the third group consisted of 20 (5 men and 15 women, average age 47.4±2.4) patients diagnosed with severe vitamin B12 deficiency anemia.

**Analysis of the study results.** Based on the severity of vitamin B12 deficiency anemia in patients, we analyzed the prevalence of H. pylori and presence or absence of some external factors (cigarette smoking, nas (granular or powdered tobacco dip) and alcohol consumption, diet, centralized water supply and sewerage).

23.3% of patients with mild vitamin B12 deficiency anemia smoked cigarettes or consumed nas, 20% drank alcohol, 76.7% did not follow the diet, and 76.7% did not have centralized water supply and sewage in their places of residence. Accordingly, 76.7% of them had no harmful habits, 80% did not consume alcohol, 23.3% followed the diet, 26.7% had centralized water supply and 23.3% had sewerage. H.pylori antibodies in the blood of patients who smoked cigarettes or consumed nas, drank alcoholic beverages, did not follow the diet, and did not have centralized water supply and sewage in their places of residence were 34.2±1.2 U/ml, 34.4±0.6 U/ml, 33.4±0.6 U/ml, 34.3±0.6 U/ml and 35.2±0.6 U/ml, respectively.

The values of H.pylori antibodies in the blood of the patients who did not smoke or consume nas, did not drink alcohol, followed the diet, and had centralized water and sewerage at their place of residence was as following: 26.8±3.2 Ud/ml, 27.1±3.1 U/ml, 31.4±0.4 U/ml, 32.3±0.4 U/ml and 33.7±0.4 U/ml. When the the H.pylori antibody levels were compared between the two groups along all these indices, differences were statistically significant.

13.3% of patients with moderate vitamin B12 deficiency anemia smoked cigarettes or consumed nas, 16.6% drank alcohol, 76.7% did not follow the diet, 56.6% did not have centralized water supply and 90% sewage in their places of residence.
Accordingly, 76.7% of them had no harmful habits, 83.4% did not consume alcohol, 23.3% followed the diet, 43.4% had centralized water supply and 10% had sewerage. H.pylori antibodies in the blood of patients who smoked cigarettes or consumed nas, drank alcoholic beverages, did not follow the diet, and did not have centralized water supply and sewage in their places of residence were 37.2±1.2 U/ml, 37.4±0.6 U/ml, 38.4±0.6 U/ml, 39.3±0.6 U/ml and 40.2±0.6 U/ml, respectively.

The values of H.pylori antibodies in the blood of the patients who did not smoke or consume nas, did not drink alcohol, followed the diet, and had centralized water and sewerage at their place of residence was as following: 33.7±0.4 U/ml, 34.7±0.4 U/ml, 35.1±0.6 U/ml, 36.3±1.2 U/ml and 37.6±0.6 U/ml. When the the H.pylori antibody levels were compared between the two groups along all these indices, differences were statistically significant.

20% of patients with severe vitamin B12 deficiency anemia smoked cigarettes or consumed nas, 16.6% drank alcohol, 76.7% did not follow the diet, 80% did not have centralized water supply and 90% sewage in their places of residence. Accordingly, 80% of them had no harmful habits, 83.4% did not consume alcohol, 23.3% followed the diet, 20% had centralized water supply and 10% had sewerage. H.pylori antibodies in the blood of patients who smoked cigarettes or consumed nas, drank alcoholic beverages, did not follow the diet, and did not have centralized water supply and sewage in their places of residence were 46.5±2.6 U/ml, 47.4±2.6 U/ml, 47.6±2.6 U/ml, 49.3±2.4 U/ml and 49.7±2.4 U/ml, respectively.

The values of H.pylori antibodies in the blood of the patients who did not smoke or consume nas, did not drink alcohol, followed the diet, and had centralized water and sewerage at their place of residence was as following: 39.2±2.2 U/ml, 39.6±2.2 U/ml, 40.1±2.3 U/ml, 41.2±2.3 U/ml and 41.6±2.3 U/ml. When the the H.pylori antibody levels were compared between the two groups along all these indices, differences were statistically significant.

The study of the effects of external factors to vitamin B12 deficiency anemia showed the presence of a relationship 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 vitamin B12 deficiency anemia.

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

1. Cigarettes, nas and alcohol 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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