

POSSIBILITIES OF EARLY SELECTION DONORS OF BONE MARROW NON-INVASIVE AND INVASIVE METHODS OF DIAGNOSTICS INFECTION *HELICOBACTER PYLORI*

^{1,2}Baratova D.A., ³Baratova M.A.

¹National Register of hematopoietic stem cells Kirghizia, Saint Petersburg, e-mail: baratova@list.ru;

²NMU "Eurasian Center oncohematology, immunology and therapy", Saint Petersburg;

³AO "National scientific center oncology and transplantology", Astana, e-mail: maksat-7brt@list.ru

The article presents the results of studies non-invasive and invasive methods of diagnosis of *Helicobacter pylori* infection in donors of hematopoietic stem cells Kirghizia. Such studies are being conducted for the first time. After spending a non-invasive breathing ammonia HELIK® – test at 201 voluntary bone marrow donors, as a result of the study, which revealed positive results in 55% of cases of *Helicobacter pylori* infection among donors kirghiz nationality and healthy residents of russian-speaking population of Kirghizia in 45% of cases. And during primary of negotiability at donors kirghiz ethnic nationality revealed negative results in 43% of cases and 57% of cases at healthy residents of russian-speaking population of Kirghizia. Invasive method identified 84 potential bone marrow donors of kirghiz nationality from National Register of hematopoietic stem cells Kirghizia residing in the city of St. Petersburg in order to determine the amount of IgG antibodies to *Helicobacter pylori* infection by enzyme immunoassay. It is established that the majority of examined potential donors kirghiz nationality had blood low and middle-Ig G to infection *Helicobacter pylori*. High level (from 91–120 U/ml) of antibody IgG to *Helicobacter pylori* was detected in 13% of cases. Detection rate infection *H. pylori* is high, and breathing ammonia HELIK®-test and the determination antibodies of IgG to *Helicobacter pylori* infection often recorded *H. pylori* infection among men compared with women. Thus, at the selection of donors in National Register of hematopoietic stem cells Kirghizia and in the planning of the closely related, unrelated bone marrow transplantation, research is needed on the *H. pylori* infection to improve the safety of bone marrow. This allows us to investigate the donor as with prophylactic measure for the early detection of infection and timely carrying in-depth examination and treatment at doctors specialists the National Registry of hematopoietic stem cells. In the presence of *H. pylori* infection in donors necessary be timely with the pathology of the gastrointestinal tract, dyspeptic syndrome, to not allow before expensive immunogenetic studies donors bone marrow and included in the database of the National Register of hematopoietic stem cells Kirghizia, as carriers of infection *H. pylori*. At observance to international protocols take biopsy material in the stomach, breathing ammonia HELIK® test and determination of serum antibody titers by enzyme immunoassay IgG to infection *Helicobacter pylori* have a high clinical efficacy for the diagnosis of *H. pylori* in the stomach which accuracy is 90%.

Keywords: *Helicobacter pylori*, donors, kirghiz nation, prevalence, prevention

To date, infection *Helicobacter pylori* (*H. pylori*) – wears a global character and it has ubiquitous spread.

H. pylori – isolated in pure culture and B. Marshalom Dzh. Uorrenom in 1982 [3], is defined as the probable etiologic agent of gastritis and peptic ulcer in humans.

Infection *H. pylori*, plays a role in the development of tumor process "carcinogen for human" factor is deeply involved in the genesis of cancer, lymphoma of the stomach MALT-type and a significant role

in the occurrence of erosive gastritis, gastric ulcer, duodenal ulcer.

According to several authors [1, 2] that in Kirghizia by prevalence morbidity rate of stomach cancer is significantly high constitute in 12,4%, and came in first place in the structure of cancer among the countries of the CIS.

It is well known, that in most developed and developing countries prevalence infection *Helicobacter pylori* has fundamental differences.

There are principled differences in the levels and the pace of infected in the different ethnic groups in developed countries. In the USA, of infected europeoids to 21 years of life is 8%, dark-skinned of the same age – 43% [6].

According to the data some researchers [5] in China rates infection *Helicobacter pylori* infection were noted in 86% among adult population.

At the epidemiological direction *Helicobacter pylori* infection wears widespread character, it is believed, according to numerous data [4], that the infection takes over 60% of the world's population, which is comparable only with the prevalence of dental caries, *Streptococcus mutans*.

It is known, that in the development of clinical disease play an important role such factors as the genetic characteristics of an organism, so and internal, external, and social environment. Given, that the disease often transformed and have a chronic form. However, on the early stages of infection process targeted investigations of bone marrow donors on infection *H. pylori* extremely are rare.

The purpose of this study was to identify non-invasive and invasive methods of infection with infection *Helicobacter pylori* of donor's hematopoietic stem cells.

Materials and methods of research

From February 2012 to November 2015 years were investigated 201 voluntary donors bone marrow breathing ammonia HELIK® tests at clinics in Bishkek and of

the St. Petersburg, at the age of 17 to 55 years, of them kirghiz nationality women 54, men – 46 donor's and 100 donors residents Russian-speaking population of Kirghizia, of them – 48 women and 52 men.

And in the group of studies from 2003 to October 2015 years included 84 potential bone marrow donors kirghiz nationality from the National Register of hematopoietic stem cells Kirghizia. The studied 84 sera bloods from donors to determine the amount of antibodies IgG to *Helicobacter pylori* infection in the laboratory of the St. Petersburg Scientific Research Institute of Pasteur, in aged 17 to 55 years old, of them 16 women and 68 men, residents in the city St. Petersburg.

The data of were compared, with control group – 79 healthy people of the North-West region of the Russian Federation.

Determination of ammonia breathing helik®-test infection helicobacter pylori

Ammonia breathing HELIK® test (Co, Ltd "AMA", St. Petersburg, Russia). Registration number 012600862. The method is determined by registering the concentration of ammonia in the air after oral administration to the patient portion of carbamide,

Based on the evaluation of urease activity in the stomach to change ammonia – concentration in exhaled air after taking the patient portion of urea normal isotopic composition, Conducted 6 minutes before load and 6 minutes after loading, Studies sampling will take about 15 minutes with conclusion about results. Method comfortable, painless and immediately after the test with the interpretation of the survey results. Specificity – 95 %. Sensitivity 92 %.

Determination of the amount antibodies of igg to infection *H. pylori*:

In order to determine the amount of IgG to *Helicobacter pylori* by enzyme immunoassay, analysis ex-

pressed in international units, was used in this test-system "ImmunoKombII *H. pylori* IgG".

The results were evaluated on a scale attached to the test system. On antibody levels serum distributed by the respective groups. 0–19 U/ml – negative, 20–39 U/ml – a low level of antibodies, 40–90 U/ml – the average (middle) levels of antibodies, 91–120 or more U/ml – high levels of antibodies

Statistical analysis of the results include the analysis of standard criteria. X^2 -square was used to assess significant differences in the propagation of certain characteristics between the control group and a group of donors. Determination of the "p" corresponding to the found value X^2 is the square, was carried out by a computer program based on one degree of freedom. Statistical analysis of the studies were carried out using the application package for the spreadsheet – Microsoft – ExcelM version 7.0 for Windows 95, for Windows-based 2010, Statistica-5.

Results of research and their discussion

The results studies at voluntary bone marrow donors enable the early diagnosis hidden carrier's infection *H. pylori*, which leads to the timely suspension from donation donor bone marrow.

As seen from Fig. 1, the prevalence of carriage of infection *H. pylori* among voluntary donors kirghiz nationality during primary of negotiability, detection of negative results in 43% of cases and 57% of cases in healthy residents of Russian-speaking population of Kirghizia. It is shown, that the most frequently revealed positive results among donors kirghiz nationality in 55% of cases and in healthy resident's Russian-speaking population of Kirghizia in 45% of cases.

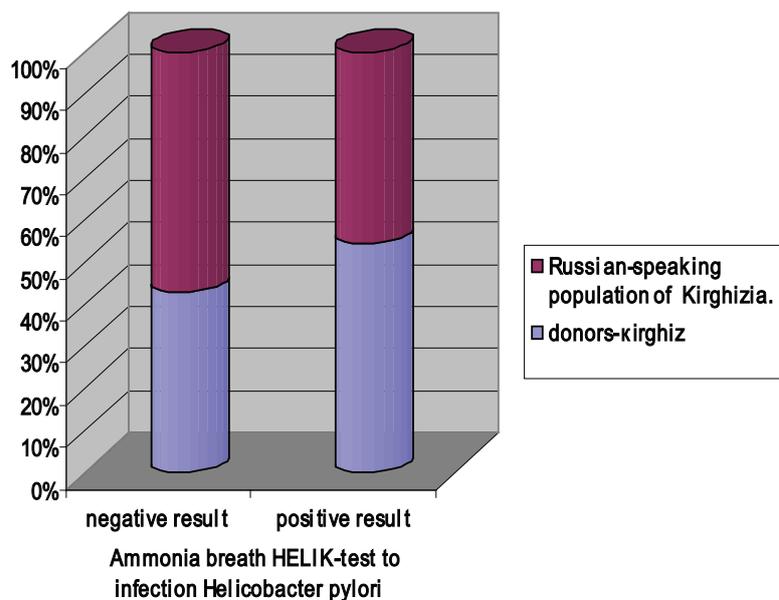


Fig. 1. Comparative evaluation of the frequency detection of infection *H. pylori* ammonia breathing HELIK®-tests at voluntary donors of kirghiz nationality and residents of the Russian-speaking population of Kirghizia

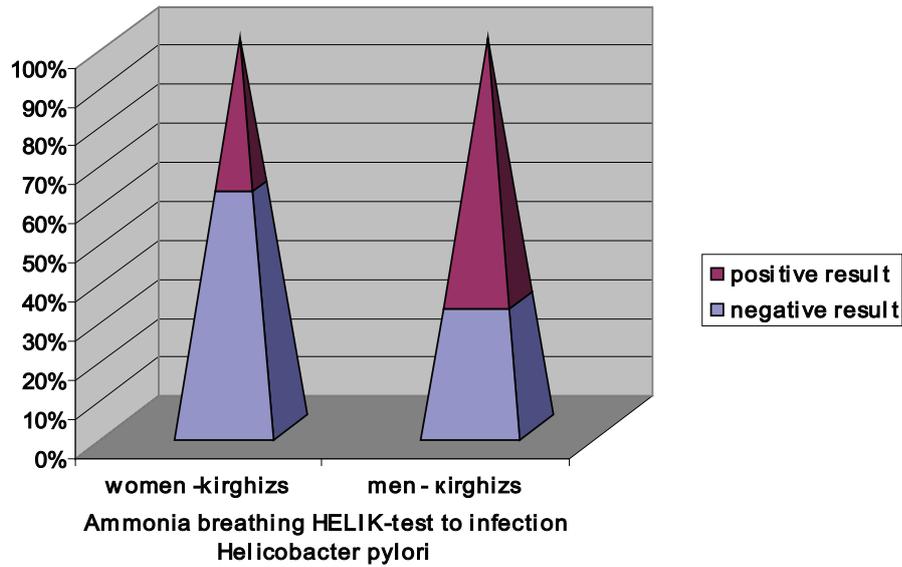


Fig. 2. Prevalence carriers infection H. pylori among voluntary donors of kirghiz nationality

In carrying out our research on the carriage of infection H. pylori ammonia breathing HELIK®-test among voluntary donors of kirghiz nationality, the data presented in Fig. 2, negative results among women found in 58% of cases and the positive results of an average in 42% of cases, and among men donors kirghiz ethnic negative results in 29% of cases and the positive results in 68% of cases, but donors considered themselves practically healthy

people, however, at in-depth polls we identified clinical manifestations of some donors in the form of dyspeptic symptoms (dyspeptic syndrome) and had a chronic disease in remission. When conducting our research from the National Register of hematopoietic stem cells Kirghizia at potential donors were identified antibodies to infection Helicobacter pylori. Donors who considered themselves healthy people. Clinically no symptoms.

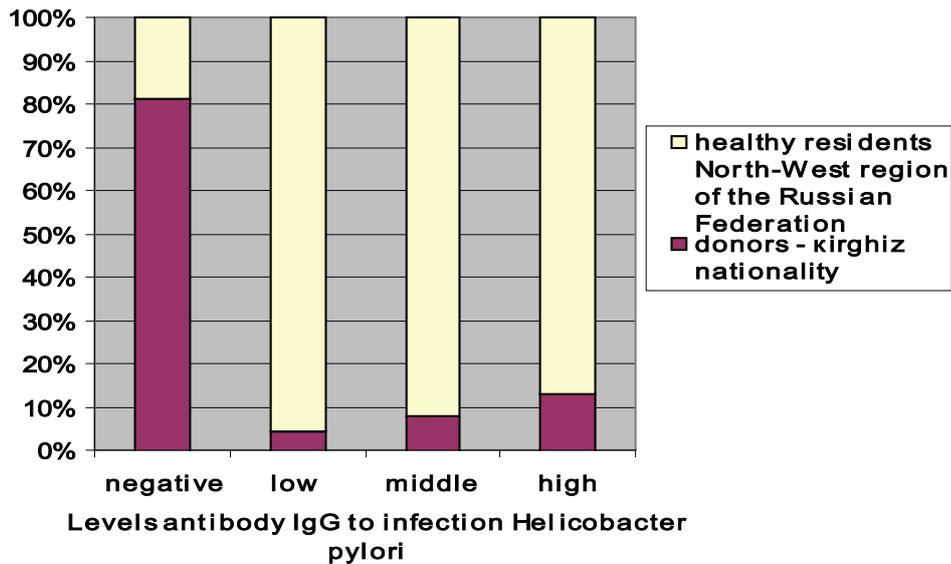


Fig. 3. The frequency detection of antibodies IgG to infection Helicobacter pylori in potential donors kirghiz nationality and healthy residents of the North-West of Russia

As seen in Fig. 3, most often revealed antibodies IgG to infection *H. pylori* among donor kirghiz nationality highest levels in 13% of cases, the average level in 8%, of the lowest levels in almost a few cases about 1–2% and negative in 80% of cases. In contrast, at healthy residents of the North-West region of the Russian Federation, it turned that more often low levels in 98–99% of cases, the average levels in 92% of cases, high levels in 87% of cases and negative levels antibodies IgG to infection

Helicobacter pylori in 20% of cases. When detailed surveys revealed in anamnesis of chronic gastritis in remission, chronic bronchitis (smoker) in remission.

At potential bone marrow donors, these data are given in Fig. 4, shows that among men of kirghiz nationality negative levels of antibodies IgG to infection *H. pylori* detected in 66% of cases and women in 34% of cases, low levels of antibodies indicators among men 54%, women 56%, medium and high levels are detected among women from 1–2 to 3–4% of cases, and among men from 99,9% to 99,7% of the time.

Conclusion

Thus, considering the above data, for the selection of donors in bone marrow register, you need a thorough and quality examination, by to the principle of “do no harm neither to the donor, neither patient”. With

inclusion the donor in the National Register of hematopoietic cells of Kirghizia, it is necessary to survey of a donor for the presence of microbe *H. pylori* ammoniac breathing HELIK®-test.

Ammonia breath HELIK®-test appropriate to apply with purpose in the quality as a method of early diagnosis on the presence of infection *H. pylori* at primary of negotiability voluntary donors to the National Register of hematopoietic stem cells Kirghizia for the solution of important and specific issues The donor is health or not? on indications include in the National Register of donor hematopoietic stem cells Kirghizia or not? The subsequently, donor whether the can be a potential bone marrow donor or not?

On the current time the advantage of ammoniac breathing HELIK®-test is its safety, accessibility and economically profitably. The uniqueness this non-invasive method HELIK®-test – the need to address specific issues the presence or absence infection *H. pylori* and is one of the most effective and convenient methods for diagnosing in outpatient conditions in clinical practice.

When planning unrelated, closely related bone marrow transplantation in potential donors of bone marrow from National Register of hematopoietic stem cells, necessary define antibodies IgG to infection *H. pylori*.

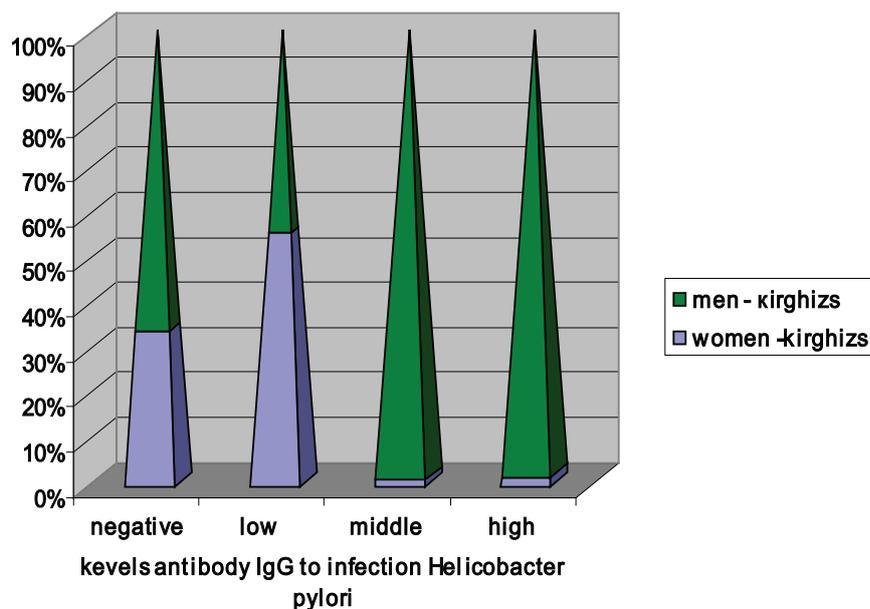


Fig. 4. The frequency of detection antibodies IgG to infection *H. pylori* among potential donors of kirghiz nationality from the National Register of hematopoietic stem cells Kirghizia

When diagnosing infection *H. pylori*, donors included in the database of the National Register of hematopoietic stem cells of Kirghizia, how debarred from the donation of bone marrow, as carriers infection *H. pylori*.

Findings

1. Investigate the voluntary donor on the infection *H. pylori* ammonia breathing HELIK®-test before inclusion in the National Register of hematopoietic stem cells Kirghizia.

2. Investigate the potential donors of bone marrow from the National Register of hematopoietic stem cells Kirghizia, before the planning closely related, unrelated transplantation ammonia breathing HELIK®-test and antibodies IgG infection to *H. pylori* with prophylactically.

3. In potential bone marrow donors kirghiz nationality, often revealed low and medium levels antibodies of IgG to infection *Helicobacter pylori*. At available a chronic dyspeptic symptoms in the gastrointestinal tract and in the blood serum elevated levels of antibodies IgG infection to *H. pylori*, importantly conduct EGD-skopiya with biopsy.

4. In the presence of ammonia detection infection of *H. pylori* respiratory HELIK® test and ELISA high levels of antibodies IgG to *H. pylori* infection, you need in-depth study, to conduct EGD-scopy with take with different and it is desirable a maximum before 5 section of biopsy material, and further treatment and observation at the gastroenterologist, therapist (oncologist if appropriate).

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