



Sosina S.S., Golderova A.S., Loskutova K.S., Efremova S.D., Alekseevay E.A.

A modern method of early diagnosis of preoncologic changes of gastric mucosa

ABSTRACT

In order to detect precancerous forms of chronic gastritis in the conditions of the North with use of modern noninvasive immunoenzymometric methods of diagnostics (the GastroPanel test set) a number of population from the settlements Vitim and Tolon of the Lensky region of RS(Ya) with chronic gastritis are examined. We revealed that the survey method «Gastropanel» allows to receive information on structure and function of gastric mucosa as well as to identify patients with expressed atrophic gastritis referring to a group of oncological risk with high sensitivity and specificity.

Keywords: atrophic gastritis, “Gastropanel”, identification.

Atrophic gastritis often proceeds without symptoms and often remains not diagnosed. In most cases *Helicobacter pylori* infection is the cause of atrophic gastritis, which is always associated with gastritis. A half of humanity is infected by this infection (about 3,5 billion people). Almost at 50% of the persons infected with *Helicobacter pylori* atrophic gastritis is diagnosed, which in most cases leads to a cancer of stomach and in 90% of cases it is the reason of development of stomach ulcer. Stomach ulcer is noted at 10% of world's population.

In 1994 the International Agency for Research on Cancer (IARC) and the research organization under jurisdiction of WHO presented results of the conducted researches that *Helicobacter pylori* infection is a major risk factor of development of cancer of stomach. The infection of *Helicobacter pylori* is considered as a causal factor of development of cancer of stomach (carcinogen class 1). According to these provisions *Helicobacter pylori* infection starts a chain of the reactions that leads to development of atrophic gastritis, which in turn causes a cancer of stomach at some patients. At patients with atrophic gastritis of the stomach the risk of development of the cancer of stomach is more frequent in 5 times, in comparison with other population. If mucosa of all of the stomach is damaged (heavy atrophic gastritis of a body and antral department), the risk increases up to 90 times. If the atrophic process is localized only in antral department, the risk is increased up to 20 times, besides, the risk of development of stomach ulcer is 25 times higher, than in other population.

Ablation of *Helicobacter pylori* infection leads to the treatment of atrophic gastritis. Atrophic gastritis slowly recovers after the successful ablation. The risk of development of the diseases connected with atrophic gastritis decreases respectively or disappears completely.

Now the "Gastro Panel" or gastroscopy with histologic research of biopstat are the only methods of diagnosis of gastritis and atrophic gastritis, as well as of their severity and localizations.

Creation of the "Gastro Panel" test panel is the result of decades of the basic medical researches conducted in Finland. By means of conducting "Gastro Panel" on blood test, it is possible to define a state and functional activity of all mucous membrane of stomach. This new method is noninvasive, safe and convenient for the patient. In most cases by means of "Gastro Panel" results of the research of a state and functional activity of mucous membrane of the stomach are found out similar to results to endoscopy with biopsy research. However, the endoscopy with biopstat capture is a subjective method of the research in many respects depending on professional skills and experience of an endoscopist and pathologist. It is necessary to notice that "Gastro Panel", in comparison with the gastroscopy and biopsy research is more sensitive method of inspection and allows to diagnose considerably smaller changes of structure and functional activity of mucous membrane of the stomach [5].

According to researches of the Yakut scientific center Russian Academy of Medical Science of RS (Ya) of Loskutova K.S., Argunova V.A. (2007) [4] contamination of *Helicobacter pylori* of adult population is 76,1% in Yakutia. In the general structure of the examined children and teenagers [3] contamination of *Helicobacter pylori* was 58,5%, atrophic gastritis at 8,5% of teenagers and 34% of adults from among indigenous people of the North was combined with an intestinal metaplasia, displasia of a mucous membrane of a stomach [6].

According to researches of the scientific research institute of therapy RAMS in Novosibirsk [2] frequency of atrophy in a stomach body at the population of Novosibirsk, urban and country people of Yakutia made respectively 10,1, 16,7 and 25,6%, and in antral department – 10,7, 25,6 and 8,9%. The total atrophy is registered in 1% in all groups. The infection of *Helicobacter pylori* is revealed at 78 – 88%.

According to researches of employees of clinical hospital of Yakutsk and NEFU [1] with the use of "Gastropanel" the stomach body atrophy (isolated or in combination with an atrophy of antralny department) is revealed among persons aged till 50 years was in only in 6,1% of cases, and in in a group of persons is more senior than 50 years – is diagnosed in 31,2% of cases.

And, the atrophy of antral department of the stomach with low indicators of postprandial level gastrin-17.

Thus, studying and development of issues of the early diagnostics, prevention and treatment of precancer changes mucous of the stomach has the perspective direction in decrease of the incidence of stomach cancer in the population of the North.

Aim of the Research: Identification of the precarcinogen forms of chronic gastritis in the Northern conditions with use of a modern noninvasive immune ferment method of the diagnostics of "Gastropanel" and their comparison with the morphological picture of stomach mucous.

MATERIALS AND METHODS

21 patients with chronic gastritis (10 men and 11 women) aged from 26 till 67 years residents of the settlement of Vitim and settlement of Tolon of the Lensky region of RS (Ya) are examined including 11 Yakuts and 10 Russians. Except 2 patients, who have lived in the north for 6 years, all of them were born in a settlement or moved from other areas of the republic.

For diagnostics of the phenotype of gastritis the GastroPanel test set of Biohit firm (Finland) is applied including the immunofermental analysis of antibodies to *Helicobacter pylori* (IgG), pepsinogen 1 (PG1), pepsinogen 2 (PG2) and gastrin-17 (G-17). Functional heterogeneity of departments of stomach serves as a basis for using "Gastropaneli": in antral department G-17 and PG 2 were produced, and in a stomach body - PG1 and PG2. Respectively, when progressing the atrophy of a body of stomach the decrease in production of PG1 will be observed, and at multifocal gastritis – decrease in PG1, and at multifocal gastritis – the decrease in PG1 at the normal or increased G-17 values.

RESULTS AND DISCUSSION

According to "Gastropanel" at 18 patients (85,7%) gastritis was associated by *Helicobacter pylori*, the infection with a cytotoxic strain of CagA. Increase of indicators of PG2 (more than 10 mg/l) at 14 patients (66%) corresponds to high activity of inflammatory process in a mucous membrane of stomach. According to G-17 hormone 15 patients (71,4%) had a level of acidity of gastric juice within norm, easy decrease in acidity was noted at 3 patients, the hypochlorhydria and an achlorhydria are noted at 2 patients, the increased acidity of gastric juice at 4 patients. The PG1 level was reduced (less than 25 mcg/l) at 2 patients that testifies to the atrophy of fundal department mucous of the stomach. 4 patients had a low ratio of PG1/PG2 (lower than 3) that testifies to the atrophy of mucous membrane of the body of stomach.

The fibroezophagogastroduodenoscopic study with morphological research of biopstat of antral and fundal mucous departments of the stomach was carried out at the patients. The morphological picture of active gastritis was revealed at 19 patients (90,4%) and atrophic changes mucous of the stomach were noted at 3 patients with the low level of ratio of PG1/PG2 is revealed.

Conclusion: Thus, "Gastropanel" allows to receive information on structure and function mucous of the stomach, to identify with high sensitivity and specificity of patients with the expressed atrophic gastritis, groups of oncological risk.

References

1. Znachenie syvorotochnykh pokazatelej pepsinogena 1, pepsinogena 2 i gastrina 17 v diagnostike atroficheskogo gastrita / N.N. Vasil'ev, K.M. Nikolaeva, L.G. Chibyeva i [i dr.] [Value of serum indicators of pepsinogen 1, pepsinogen 2 and gastrin 17 in diagnosis of atrophic gastritis / N. N. Vasilyev, K.M. Nikolaeva, L.G. Chibyeva and [et al.] // Materialy XX mezhregional'noj nauchno-prakticheskoy konferentsii onkologov Yakutii [Materials XX of interregional scientific and practical conference of oncologists of Yakutia] – Yakutsk, 2014 . - P. 73-75.
2. Kurilovich S.A. Epidemiologiya zabolevanij organov pishhevareniya v Zapadnoj Sibiri [Epidemiology of diseases of the digestive system in Western Siberia] / S.A. Kurilovich, O.V. Reshetnikov // Pod redaksiej akademika RAMN YU.P. Nikitina – Novosibirsk, 2000. – P.165.
3. Lekhanova S.N. Morfologicheskaya kharakteristika khronicheskikh gastritov u detej Respubliki Sakha (Yakutiya) [Morphological characteristic of chronic gastritis at children of the Republic of Sakha (Yakutia)] / S.N. Lekhanova, V.A. Argunov // Materialy nauchno-prakticheskoy konferentsii «Prekantserogennye sostoyaniya organov pishhevareniya v usloviyakh Krajnego Severa» [Materials of the scientific and practical conference " Precancerous condition of digestive organs in the conditions of Far North"]. – Yakutsk, 2006. – P.10 -11.
4. Loskutova K.S. Morfologicheskie aspekty mestnogo immunnogo otveta pri Helicobacter pylori – assotsiirovannom gastrite u naseleniya Yakutii [Morphological aspects of the local immune answer at Helicobacter pylori – the associated gastritis at the population Yakutia] / K.S. Loskutova // Materialy II mezhregional'noj nauchno-prakticheskoy konferentsii «Ekologiya i zdorov'e na Severe» [Materials II of the interregional scientific



and practical conference "Ecology and Health in the North"]. – Yakutsk, 2007. – S.31-34.

Neinvazivnaya diagnostika khronicheskogo atroficheskogo gastrita pri pomoshhi serologicheskogo issledovaniya [Noninvasive diagnosis of chronic atrophic gastritis by means of serological research] / Reshetnikov O.V., Kurilovich S.A., Krotova V.A. [i dr.] // Klinicheskaya laboratornaya diagnostika [Clinical laboratory diagnostics]. - 2007. - №11. - P 39-41.

Chastota i osobennosti patologii verkhnikh otdelov organov pishhevareniya u sel'skikh zhitelej YAkutii [Frequency and features of pathology of the top departments of digestive organs at villagers Yakutia] / Bessonov P.P., Bessonova N.G., Kurilovich S.A. [i dr.] // Yakutskij meditsinskij zhurnal [The Yakut medical journal] / Bessonov P.P., Bessonova N. G., Kurilovich S. A. [et al.] // – 2012. - №. 4(40). - P. 28-30.

Authors:

1. Sosina Svetlana Stepanovna – cand. med. sciences, senior lecturer of the department of propaedeutic and faculty therapy with endocrinology and ART, Medical institute Northeast federal university of M.K.Ammosov, sosinasveta@gmail.com <<mailto:sosinasveta@gmail.com>>
2. Golderova Ajtalina Semenovna – doctor of med. sciences, head, chief researcher of FSBSI «YSC CMP», hoto68@mail.ru <<mailto:hoto68@mail.ru>>
3. Loskutova Kjunnjaj Savvichna – cand. med. sciences, chief non-staff pathologist RS (Y), head of pathologic department RH 1- NCM
4. Efremova Svetlana Dmitrievna – junior research associate of FSBSI “YSC CMP”
5. Alekseeva Elizaveta Aleksandrovna - junior research associate of FSBSI “YSC CMP”