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PREVALENCE AND RISK FACTORS OF ACID DISEASES IN THE ADULT POPULATION OF THE REPUBLIC SAKHA (YAKUTIA)

ABSTRACT

In order to study the prevalence of risk factors of acid diseases in the adult population according to the residence area in the Republic Sakha (Yakutia), we surveyed men and women aged 45-70 years, living in the Arctic and Central Yakutia. We concluded that prevalence of symptoms of acid disorders was 53%, more often in the living in the Arctic. We revealed the high prevalence of chronic atrophic gastritis, *Helicobacter pylori* infection and poor dental health. Some risk factors for these disorders are modifiable, allowing to plan in their relation therapeutic and prophylactic measures.

Keywords: acid disorders, gastroesophageal reflux disease, population, prevalence, risk factors.

INTRODUCTION

Acid-related diseases are the cause of diseases of the stomach, duodenum (peptic gastric and duodenal ulcer disease, erosive and ulcerative lesions, chronic gastritis, gastroduodenitis, syndrome of non-ulcer functional dyspepsia), esophagus (gastroesophageal reflux disease -GERD, which occupies one of the first places). The true prevalence of GERD is poorly studied. This statement is connected with a great variability of clinical manifestations - from occasionally arising heartburns at which patients rarely go to the doctor, to the bright signs of complications of reflux esophagitis [1, 5].

In recent years, there is a clear downward trend in the number of patients with peptic ulcer disease on the background of increased number of patients suffering from GERD, which gave reason to declare this pathology a disease of the 21st century at the VI united Gastroenterological Week held in Birmingham in 1997. The term "reflux disease" was proposed in the mid 60s of the 20th century and involves a combination of the clinical picture of the disease and its associated morphological changes - reflux esophagitis, which has occurred as a result of continuous flow back in the esophagus of gastric or intestinal content, bile and pancreatic juice. GERD as an independent nosological unit officially was recognized in 1997 in the Belgian town of Genval at

a conference devoted to the diagnosis of the disease [3, 5]. In accordance with the WHO classification of GERD - it is a chronic relapsing disease caused by a violation of the motor-evacuation function of the gastroesophageal zone and characterized by spontaneous and (or) regularly repeated throwing up into the esophagus gastric or duodenal content, resulting in damage to its distal department.

As for dyspepsia it is a syndrome, including pain or burning in the pit of the stomach, heaviness and fullness in the epigastrium after eating, early satiety, bloating, nausea, and vomiting, belching and some other symptoms. In Western Europe, functional dyspepsia is found in 30-40% of the population, it is the cause of 4-5% of all visits to the doctor. In the USA and UK dyspeptic symptoms bother respectively 26 and 41% of the population.

Heartburn and acid regurgitation are the main symptoms of acid disorders. The prevalence of heartburn in the USA, the UK and Finland amounted to 24-36%, when it concerned of heartburn in general, and 10-21% of the population had heartburn weekly [5].

The foreign and domestic statistical studies report, that almost every tenth citizen of the European countries, the USA and Russia suffers from peptic ulcer disease (GU) of the stomach and duodenum, and the prevalence of GERD in adults is about 40% and 30% in Yakutia [1, 3, 5].

Here is some information about geographical position of the Republic Sakha (Yakutia). It occupies a vast territory, more than 40% of it lies above the Arctic Circle. Central Yakutia area includes Yakutsk and its suburbs, as well as the areas located in the basins of the Lena river flow, Viluy, Lena-Amga interfluve. Anabar, Nizhnekolymsky, Allaikhovskiy, Bulunsky and Ust-Jansky areas, situated along the shores of the Arctic Ocean, refer to the number of Arctic regions. In the Arctic low temperature is accompanied by strong winds. In the period from November to January polar night falls over a large territory. According to the complex of natural factors that affect the human body, this region is very harsh to live.

The aim of this study was to investigate the prevalence of acid diseases and risk factors among the population of Yakutia living in the various climate areas.

MATERIALS AND METHODS

We studied 2 groups of population - those, living in Central Yakutia and in the Arctic. In Central Yakutia survey was carried out among the indigenous population of two villages, in total 133 people (63 men and 70 women) aged 45-70. In Arctic villages we surveyed 131 people (31 and 100), aged 45-70 years. To identify the symptoms of the disease we used gastroenterological questionnaire, there was also conducted blood sampling and 40 people underwent endoscopy. Infection with *Helicobacter pylori* (Hp) we assessed using a test

system for the detection of cytotoxic (expressing CagA - protein) Hp strains. Each respondent signed the informed consent form to participate in the study. Statistical processing was carried out using SPSS 9.0 program. The criterion for statistical significance was a level of $p = 0.05$.

RESULTS AND DISCUSSION

Prevalence of symptoms of acid diseases accounted 51% in the inhabitants of Central Yakutia and 56% in the inhabitants of the Arctic zone (Table 1).

We compared age groups (45-60 and 61-70 years) and found out that the frequency of acid disease symptoms did not differ between these groups. There was no age difference in the incidence of individual symptoms. As it can be seen from Table 2, the prevalence of symptoms of acid diseases more often is observed among residents of a northern zone of Yakutia. It is well known that the nature and climate of Yakutia, being not major etiological factors of disease, nevertheless play a role in the pathogenesis of various diseases as predisposing factors that determine the regional peculiarity of disease course.

Increase of intra-abdominal and/or intra-gastric pressure in combination with the failure of the lower esophageal sphincter is considered to be factor, associated with GERD. Obesity, wearing a tight belt, stretching stomach with abundant food or slowing of gastric emptying leads to the increase of intra-abdominal and/or intra-gastric pressure; the failure of the lower esophageal sphincter is provoked by smoking, alcohol intake, certain medications (nitrates, calcium channel blockers), increased level of estrogen and progesterone during pregnancy [3, 5].

According to our data, the vast majority of the surveyed diet themselves (Tab. 3); eat 4 times a day, the main meal at lunch time, rarely hasty meals and dry rations food and no big break between meals. Thus, we revealed no association of acid diseases with eating disorders, except in individuals taking the main meal in the evening ($p = 0.02$). We often revealed the poor condition of the teeth (dental caries, missing teeth) in the adult population.

In accordance with our data, in the both surveyed populations there was revealed high prevalence of Hp infection - 87.8%. In the rural residents pepsinogen level 1 (PG1) was significantly lower than that of the urban population. Thus, the rate of atrophy of the gastric mucosa is observed in rural residents more often than in urban ones. Normal indicators of PG1 and gastrin - 17 (G-17), indicating a lack of atrophic changes in the gastric mucosa, were revealed in only 43% of the inhabitants of Yakutia, compared with 69% of residents of Novosibirsk [6]. These differences are probably not linked to genetic factors, but rather with the peculiarities of diet and lifestyle. In rural areas, there is deficiency in fresh foods: vegetables, fruits, berries, dairy products, meat, assortment of which is very limited in the cold period, continuing most of the year. The lack of fresh products and the use of canned and salt food are known as one of factors of atrophic gastritis and gastric cancer. The study of food of indigenous people reveals that nutrition is unbalanced and suggests a lack of basic micronutrients, minerals and vitamins in the diet [4].

It is known that the long persistence of Hp in gastroduodenal zone is accompanied by a general, systemic exposure to the human body, a

plurality of loop-related biologically active substances (toxins, cytokines, leukotrienes, prostaglandins, etc.), and with the possible development of autoimmune reactions. Noteworthy are and materials on the participation of Hp in the etiology of chronic pancreatitis. Such a connection is theoretically possible, as Hp, as already mentioned, changes the function of the stomach and duodenum, and the pancreas has a close anatomical and physiological relationship with these bodies. Thus, Hp inhibits the synthesis and expression of somatostatin with the stomach D-cells, which is accompanied by a reduction of antral density of these cells, while the density of G - cells and synthesis of gastrin increase significantly with the subsequent development of the hypersecretion of hydrochloric acid, and the acidification of the duodenum can stimulate the secretion of pancreatic through the allocation of secretin [8]. In addition, gastrin expresses a weak like cholecystokinin effect on pancreatic secretion [9]. Recently it has been shown that in the H-positive person inter-digestive secretion of pancreatic amylase, lipase and chymotrypsin was significantly higher, but post-prandial secretion of enzymes tended to increase. So, in individuals infected with Hp, even in asymptomatic carrier, functional disorders not only of the stomach but also of pancreatic gland are marked [7]. Diseases' interference significantly changes clinical symptoms and course of disease, the nature and severity of complications, impairs the quality of life of the patient and complicates diagnostic and therapeutic effect [2].

Pursuant to our study, marital status and employment characteristics of the surveyed had no significant effect on the frequency of symptoms. Helicobacter infection in populations was revealed in the most studied, in this regard we did not find connection of the infection with symptoms, in contrast to other studies. The prevalence of Hp infection is very high, that perhaps, determines the absence of association with symptoms and individual nosological units, since the vast majority of the population is infected.

CONCLUSION

Symptoms of acid disorders have been reported in 53% of the adult population, more frequently in the residents of the northern Yakutia regions. Risk factors of acid diseases are associated with the diet violation and food consumption in the evening. We revealed a high prevalence of chronic atrophic gastritis, Helicobacter pylori infection and poor dental health. Socio-demographic characteristics, alcohol, intake of NSAIDs did not affect the frequency of detection of symptoms. Some risk factors for these disorders are modifiable, allowing to plan in relation

Table 1

Prevalence of symptoms of acid diseases among residents of Central Yakutia, %

Symptom	Less than 1 time per month	Once a month	Once a week	Several times a week	Daily
Heartburn	27	14	4	5	1
Sour belching	10	16	4	5	2

Table 2

Prevalence of symptoms of acid diseases among residents of the Arctic, %

Symptom	Less than 1 time per month	Once a month	Once a week	Several times a week	Daily
Heartburn	24	20	7	4	1
Sour belching	11	16	5	2	0

Table 3

Risk factors of the acid diseases in the population, depending on the area of residence

Risk factor	Diet	Central Yakutia	The Arctic	p
Eating regime	Regular	98	87	-
The number of meals per day	3 and more than 3 times a day	36 68	37 66	- -
Dry rations food	Sometimes	29	26	-
The main meal in the evening	Sometimes often	21 13	20 12	0.02
Big interval between meals	Yes	11	12	-
Quick and hasty food	Yes	39	20	-

to them therapeutic and prophylactic measures.

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ACTUAL NUTRITION INDEXES OF THE INDIGENOUS RURAL POPULATION OF YAKUTIA

ABSTRACT

We researched the actual nutrition among persons of the indigenous nationality of Yakutia. By our study we proved imbalance of the actual nutrition by macro - and micronutrients. Besides we revealed increase in a share of fats (10%) and carbohydrates (12%) in a daily diet.

Keywords: indigenous population, the actual nutrition, traditional nutrition, obesity.

INTRODUCTION

Food of indigenous peoples of the North developed protractedly, under the influence of regional features and social and economic conditions. The state of health of aboriginals of Yakutia substantially is defined by their features which have developed in the course of centuries-old selection in extreme conditions of Far North. The traditional way of life and type of food developed

during many millennia don't contribute to development of much known "diseases of a civilization". At the same time, the separation of inhabitants of a radical nationality from a native habitat, a traditional way of life and a food allowance is caused at them by growth of diseases of the blood circulatory system and digestion.

Research objective: to estimate actual food of radical villagers taking into

account a floor and nature of activity.

MATERIAL AND METHODS

During our study 307 representatives of adult population are examined (the 239 woman and 68 men aged from 30 till 50 years). The actual food of surveyed was studied by means of a method of daily reproduction of food [2], receiving data on food eaten within the last days by poll with use of an album of foodstuff and dishes [1]. On the basis