

THE USE OF DRINKING MINERAL WATERS IN THE COMPLEX SANATORIUM TREATMENT OF PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Abstract

The aim of the study is to determine the significance of the use of mineral spring waters in the sanatorium-resort therapy of type 2 diabetes mellitus. The article discusses the main indicators of the prevalence of diabetes in the world and in Kazakhstan. It has been shown that the problem of diabetes mellitus is one of the most pressing world problems of modern medicine. The scientific novelty of the work lies in the approach to the study of macro- and microelements in the composition of mineral waters, their effect on the composition of blood, as well as their ability to control the state of the body through various mechanisms of action. The article focuses on the process of activation of various systems and mechanisms of the body when using mineral waters.

Keywords

type 2 diabetes mellitus, prevalence of diabetes, mineral water, complex treatment

2 типті қант диабетімен ауыратын науқастарды кешенді шипажайлық емдеуде ішетін минералды суларды қолдану

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Аңдатпа

Жұмыстың мақсаты - қант диабетінің кешенді шипажайлық емінде минералды судың пайдасын анықтау. Мақалада қант диабетінің әлемде және Қазақстанда таралуы туралы ақпарат берілген. Қант диабетінің қазіргі таңда медицинаның өзекті проблемаларының бірі екені көрсетілген. Жұмыстың ғылыми жаңалығы минералды сулардың құрамындағы макро- және микроэлементтерді, олардың қан құрамына әсерін, сондай-ақ организмнің күйін әр түрлі механизмдер арқылы басқара алу қабілеттерін зерттеу тәсіліне негізделген. Әрекет. Мақалада минералды суларды пайдаланған кезде дененің әртүрлі жүйелері мен механизмдерінің активтену процесіне баса назар аударылған.

Түйін сөздер

2 типті қант диабеті, қант диабетінің таралуы, минералды су, кешенді емдеу

Применение питьевых минеральных вод в комплексном санаторном лечении больных сахарным диабетом 2 типа

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Аннотация

Цель исследования – определить значение применения вод минеральных источников в санаторно-курортной терапии сахарного диабета второго типа. В статье рассмотрены основные показатели распространенности сахарного диабета в мире и в Казахстане. Показано, что проблема сахарного диабета относится к одной из самых актуальных мировых проблем современной медицины. Научная новизна работы заключается в подходе к изучению макро- и микроэлементов в составе минеральных вод, их воздействия на состав крови, а также их способность контролировать состояние организма через различные механизмы воздействия. В статье акцентируется внимание на процесс активации различных систем и механизмов организма при применении минеральных вод.

Ключевые слова

сахарный диабет 2 типа, распространенность диабета, минеральная вода, комплексное лечение

Diabetes mellitus is one of the most pressing global problems of modern medicine. According to the Federal Target Program "Diabetes mellitus 1996-2005." in terms of its importance, diabetes mellitus is classified as an acute medical and social problem. According to the data of WHO experts in the world, the number of patients with this pathology has reached 150 million and is also continuing to increase, especially due to the increase in the number of people with type 2 diabetes. At a meeting of the III All-Russian Medical Congress on Pharmacoeconomics in 2001, Academician of the Russian Academy of Medical Sciences I.I. Dedov emphasized that about 2 million people are officially registered in the Russian Federation. patients with diabetes mellitus, but the real number of patients is much higher and reaches over 6-8 million people. He also noted that every 15 years the number of patients with diabetes is increasing. The GROWTH of the average life expectancy up to 80 years, according to the calculations of the American researcher C.R. Kahn, in 1995 may lead to an increase in the number of patients with type 2 diabetes in the total population up to 17%. Data from the International Diabetes Federation (IDF) indicate that in 2014 there were 422 million people with diabetes in the world, and its worldwide prevalence was 8.3% of the population. At the same time, according to the prognostic estimate, the number of patients by 2035 will be about 592 million people, of which 77% live in low- and middle-income countries.

Some researchers believe that not all cases of diabetes mellitus are recorded, and that the number of such cases reaches 174.8 million people - among the adult population of the world.

Of course, it is assumed that not all estimates and forecasts are the same. Based on data from the World Health Organization, in 2014 among the population aged 18 and over, the prevalence of diabetes reached 9%. and by 2030 the number of patients may reach more than 360 million people. (The prevalence of diabetes for all age groups worldwide is estimated at 2.8% in 2000 and 4.4% in 2030).

In Kazakhstan, there has been a steady increase in the number of patients with diabetes mellitus over the past 10 years - 2.5 times. In the Republic of Kazakhstan, as of December 31, 2018, patients with type 1 diabetes mellitus were registered - 19021 patients, type 2 diabetes mellitus - 310215 patients.

So, according to the materials of the National Register, the number of patients with diabetes mellitus, at the beginning of 2020, in absolute numbers amounted to 373 183, of which type 1 diabetes is the adult population - 30 611, type 2 - 352 022. Currently, according to the data Of the Ministry of

Health of the Republic of Kazakhstan, 3,994 children are diagnosed with type I diabetes mellitus, 127 children are diagnosed with type II diabetes.

The annual increase in the prevalence of diabetes in Almaty was shown by the analysis of data from the National Register of Diabetes Mellitus of the Republic of Kazakhstan from 2015 to 2019 - from 1.74% to 2.31%, with a trend of 7% average annual growth.

However, the current diabetes mellitus registry in Kazakhstan contains data only on patients who have already been notified of their disease. However, one should not overlook the fact that most of the patients are observed in private medical clinics and are not at all covered by the register. These questions should be studied in depth and clarified.

In Kazakhstan, according to official statistics, the number of people diagnosed with type 2 diabetes of the total number of people is 1.34%. In Kazakhstan, according to the International Diabetes Federation (IDF), the prevalence of this pathology should be 7.5% of the total population, which indicates about 500,000 undiscovered cases. However, some researchers believe that the data obtained from the International Diabetes Federation is significantly exaggerated, as a result of which there is no uniform information on this issue.

Diabetes mellitus is a global problem in society. According to WHO, diabetes will become the seventh leading cause of death by 2030. In the world, the number of patients with diabetes in 2015 at the age of 20-79 was 415 million, with 215.2 million men (2040 - 328.4 million) and 199.5 million women (2040 - 313.3 million). According to the IDF - International Diabetes Federation, the number of people with diabetes will increase to 642 million by 2040. According to the statistics cited in the YR Diabetes Atlas, in 2015 a large number of people living with diabetes mellitus were registered in the Western Pacific - 153.2 million, while this figure in 2040 will reach 215.8 million. In second place - South-East Asia - 78.3 million, and in 2040. an increase is forecasted to 140.2 million. Europe is the third (59.8 million), and in 2040. will reach 71.1 million.

Treatment of diabetes mellitus sets its main goal as a number of indicators, such as maintaining and achieving optimal metabolic control, minimizing acute and chronic complications, and achieving a high level of patient's quality of life.

A high role of sanatorium-resort treatment is assigned in the rehabilitation of patients with diabetes mellitus among the already known methods, labor and medical-social rehabilitation, which are used to prevent the disease. The greatest efficiency of spa treatment is confirmed not only by rich medical practice, but also by the results of clinical and experimental studies. In the process of spa therapy

of diabetes mellitus, an important place is occupied by drinking treatment with mineral waters, it has a beneficial effect on the main pathogenetic links of type 2 diabetes mellitus: impaired insulin secretion, impaired carbohydrate and lipid metabolism, the severity of insulin resistance, overweight, are important factors in prevention of complications in diabetes mellitus. The features of the influence of complex treatment with the use of mineral water with different chemical and gas composition inside and outside, mud therapy, as well as other pre-selected physical factors are revealed.

Sanatorium treatment with mineral waters is indicated for patients with prediabetes, patients with mild and moderate severity of type 1 and 2 diabetes mellitus in a state of stable compensation for impaired glucose tolerance, without a tendency to severe acidosis, the initial stage of microangiopathy, and also indicated for patients with diabetes in combination with diseases of the digestive system, circulatory system, liver and urinary system, biliary tract.

The main methods of sanatorium-resort therapy for type II diabetes mellitus include treatment with drinking waters of mineral springs. Natural mineral water has a positive effect on lipid and carbohydrate metabolism: hyperglycemia and glucosuria decrease, the effect of certain enzymes that promote the passage of glucose into tissues increases, and the lipid X-ray spectrum of blood serum improves. Suddenly, the flow of manufactory metabolism of carbohydrates improves, the organization of adenosine triphosphoric acid (ATP) increases, the breakdown of which produces a tremendous abundance of energy. In addition, natural waters substantially increase the sensitivity of insulin receptors to this hormone, taking into account that in almost all patients the need for insulin hormone and glucose-lowering tablet preparations is lowered. Mineral waters, when used for drinking by patients with type 2 diabetes mellitus, have a positive effect on lipid and carbohydrate metabolism: hyperglycemia and glucosuria decrease, the effect of certain enzymes promoting the passage of glucose into tissues increases, and the lipid X-ray spectrum of blood serum improves. Also, the course of manufacturing metabolism of carbohydrates improves, the organization of adenosine triphosphoric acid (ATP) increases, during the breakdown of which a large abundance of energy is given out. In addition, natural waters fundamentally increase the sensitivity of insulin receptors to this hormone, taking into account that almost all patients have a lower need for the hormone insulin and antihyperglycemic tablet preparations.

The effect of hydrocarbonate and sulphate waters is to affect carbohydrate metabolism, normal-

izing the insulin effectiveness of the blood, exacerbating the effectiveness of the enzyme hexokinase, which promotes the entry of glucose into tissues, which explains the reduction of hyperglycemia and glycosuria.

The bicarbonate cation plays a huge role in maintaining acid balance. In diseases of mild to moderate severity of diabetes, ultimately the use of hydrocarbonate waters improves carbohydrate metabolism. Ultimately, dyspeptic actions are eliminated: heartburn, belching, a feeling of heaviness in the epigastric gland, and others.

Mineral waters containing magnesium occupy a special place in the drinking treatment of a patient with the second type of diabetes mellitus. In the total volume of macro- and microelements, magnesium ions occupy a special place. Like calcium ions, magnesium can determine the activity of more than 300 enzymes. The role of magnesium in maintaining the optimal functionality of cardiomyocytes is also known, and its deficiency can provoke the appearance of various diseases of the cardiovascular system.

Also, magnesium controls blood pressure through various mechanisms of action. Also, to ensure the digestion process, magnesium ions are needed, because, on the one hand, they regulate the intestines, and on the other hand, they contribute to the secretion and formation of bile. The process of reducing the concentration of magnesium ions in the blood by 10-12% in the second type of diabetes mellitus has been established. Therefore, the process of additional intake of magnesium ions with the help of internal drinking of mineral waters can make it possible to quite effectively replenish the reserves of magnesium homeostasis and contribute to the activation of metabolic reactions, which is vital in the second type of diabetes mellitus. The longest and maximum effect can be achieved by combining drinking cure and balneotherapy treatments. If patients with diabetes mellitus of the second type use mineral baths, which will show a good dynamics of the indicator of all types of metabolism, the functional state of the nervous system, metabolism is activated, and a positive reaction to neuroregulatory mechanisms that contribute to the normalization and stabilization of hemodynamics occurs. The use of mineral baths can significantly enhance the special factors of the body's defense and improve the indicators of specific immunity, improve carbohydrate and other types of metabolism and, also, have a pronounced positive reaction to the process of concomitant diseases of the nervous and cardiovascular system, musculoskeletal system, digestive organs, kidneys, skin and genitals, as well as others.

With concomitant diseases of the digestive system in patients with type 2 diabetes mellitus, other methods of internal use of mineral waters are prescribed: duodenal drainage, gastric lavage, microclysters, siphon bowel lavage. Rectal methods of administration of mineral water in patients with type 2 diabetes mellitus contribute to the rapid elimination of ketoacidosis.

The land of Kazakhstan has a variety of tourist resources. According to reliable information from the Committee of the Tourism Industry of the Ministry of Culture and Sports of the Republic of Kazakhstan, 19 resort zones are noted and functioning in the state, a key part of them (more than 10) have medicinal factors and are balneological, mud-healing climatic resorts.

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