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## ANALYSING THE INCIDENCE OF CEREBRAL VASCULAR DISEASE IN REGIONS OF BASHKORTOSTAN WITHOUT ANTHROPOGENIC LOAD

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### ✓ Resume

The article presents the data on the study of morbidity rates of vascular diseases of the brain, including acute cerebral circulatory disorders (strokes), in Salavatsky and Karaidelsky districts of the Republic of Bashkortostan. The study showed that there are significant differences in the incidence of cerebral vascular diseases in Salavatsky and Karaidelsky districts of the Republic of Bashkortostan, which reflects the conjugation of the incidence of cerebral vascular diseases with the state of the environment, in particular, with the content of chemical elements in the natural environment

Key words: cerebral vascular diseases, acute disorders of cerebral circulation, natural environmental factors, chemical elements

## АНАЛИЗ ЧАСТОТЫ СОСУДИСТЫХ ЗАБОЛЕВАНИЙ ГОЛОВНОГО МОЗГА В РАЙОНАХ БАШКОРТОСТАНА БЕЗ ТЕХНОГЕННОЙ НАГРУЗКИ

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## √ Резюме

В статье представлены данные изучения показателей заболеваемости сосудистыми заболеваниями головного мозга, в том числе и острых нарушений мозгового кровообращения (инсультов), в Салаватском и Караидельском районах Республики Башкортостан. Проведенное исследование показало, что имеются существенные различия частоты сосудистых заболеваний головного мозга в Салаватском и Караидельском районах Республики Башкортостан, что отражает сопряженность заболеваемости сосудистыми заболеваниями головного мозга с состоянием среды обитания, в частности с содержанием химических элементов в природных средах

Ключевые слова: сосудистые заболевания головного мозга, острые нарушения мозгового кровообращения, естественно-природные факторы среды обитания, химические элементы

## БОШҚИРДИСТОННИНГ ТЕХНОГЕН ЮКЛАМАСИЗ ХУДУДЛАРИДА МИЯ ҚОН ТОМИР КАСАЛЛИКЛАРИ ЧАСТОТАСИНИ ТАХЛИЛ КИЛИШ

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## ✓ Резюме

Мақолада Бошқирдистон Республикасининг Салават ва Қорайдел туманларида миянинг қон томир касалликлари, шу жумладан мия қон айланишининг ўткир бузилишлари (инсульт) билан касалланиш кўрсаткичларини ўрганиш маълумотлари келтирилган. Ўтказилган тадқиқот шуни кўрсатдики, Бошқирдистон Республикасининг Салават ва Қорайдел туманларида мия қон томир касалликлари частотасида сезиларли фарклар мавжуд бўлиб, бу мия қон томир касалликлари билан касалланишнинг яшаш мухити холати, хусусан, табиий мухитдаги кимёвий элементларнинг таркиби билан богликлигини акс эттиради

Таянч сўзлар: миянинг қон томир касалликлари, мия қон айланишининг ўткир бузилишлари, табиий-атроф мухит яшаш омиллари, кимёвий элементлар

## Relevance

V ascular diseases of the brain represent, both in our country and in most economically developed countries of the world, the most important medical and social problem. This is due to the significant prevalence, severe consequences (high mortality, loss of ability to work) and, as a consequence, huge social and economic damage. In recent decades, cerebral vascular diseases have taken the second place among all causes of death in the Russian Federation (after cardiovascular diseases) [16, 18, 21, 22, 23, 25, 26]. Acute disorders of cerebral circulation are a severe form of vascular diseases of the brain. According to the materials of the World health organisation, the incidence of stroke in different countries of the world ranges from 150 to 740 cases per 100000 population. [7, 9, 10, 11, 24, 27].

A population survey of practically healthy individuals in a number of regions of Bashkortostan revealed a clear association of the frequency of cerebral vascular diseases with the peculiarities of natural conditions, anthropogenic (technogenic) environmental load, and socio-economic situation [3, 4, 12, 13, 14].

In the course of fundamental research by a group of scientists led by N.V. Starova (2003) it was established that in Salavatsky and Karaidelsky districts of the Republic of Bashkortostan the composition of chemical elements in soil, bedrock, water, plants, their content in blood and human hair differ significantly. With a relatively favourable characteristic of the Karaidelsky district, in the Salavatsky district the level of radioactive elements is an order of magnitude higher than the permissible values [12]. The peculiarities of the geotectonic structure of Salavatsky district predetermined the formation of mineral waters, namely radon springs. However, the use of radon water for household and drinking water supply, according to the conclusion of the radiological laboratory of the Central research institute of balneology and physiotherapy (Moscow), is contraindicated [1, 2, 15, 17, 19, 20, 28]. Salavatsky and Karaidelsky districts of the Republic of Bashkortostan do not have anthropogenic anthropogenic load and are comparable in terms of socioeconomic situation, however, they differ significantly in terms of natural factors, in particular, in chemical composition. Consequently, the study of cerebral vascular pathology frequency indicators will make it possible to trace their conjugation directly with environmental conditions.

The aim of the study was to investigate the incidence of cerebral vascular diseases in areas without anthropogenic load, differing in natural conditions, and to determine the dependence of the incidence of cerebral vascular diseases on the characteristics of the living environment.

## Materials and methods

Materials of annual reports of the neurological service of Salavatsky and Karaidelsky districts of the Republic of Bashkortostan for 2016 - 2022 were studied. Karaidelsky district of the Republic of Bashkortostan was chosen as a control, as a district with minimal anthropogenic technogenic load [5, 8, 15]. Such indicators as morbidity (frequency of new cases of cerebral vascular diseases) - number of cases of cerebral vascular diseases calculated per 1000 inhabitants of the study area per year; morbidity (prevalence or frequency of all cases of cerebral vascular diseases) - number of cases of cerebral vascular diseases calculated per 1000 inhabitants of the study area per year; mortality - number of cases of cerebral vascular diseases that ended lethally, calculated per 1000 inhabitants of the study area per year; mortality - number of cases of cerebral vascular diseases that ended lethally, calculated per 1000 inhabitants of the study area per year; mortality - number of cases of cerebral vascular diseases that ended lethally, calculated per 1000 inhabitants of the study area per year [6, 24].

Average and relative values were used in analysing the obtained materials. Statistical reliability of the difference between quantitative indicators was carried out by Student's criterion, the differences were considered reliable at  $p \le 0.05$ .

### Results and discussions

The data of the analysis showed that the frequency of morbidity and incidence of cerebrovascular pathology during 7 years (in 2016-2022) in Salavatsky district is higher than in Karaidelsky district.

The high level of morbidity, morbidity of cerebrovascular pathology in Salavatsky district, which is more unfavourable by its natural factors, shows the conjugation of the frequency of cerebral vascular diseases from the state of the environment with different content of chemical elements.

At the same time, the share of acute cerebral circulatory disorders in the structure of cerebral vascular diseases in Salavatsky district is lower than in Karaidelsky district and is quite stable during 7 years. The level of hospitalisation of patients with acute cerebrovascular disorders in the acute period is significantly higher in Salavatsky District.

Mortality and disability rates are significantly higher in Karaidelsky district, and in recent years there has been a tendency for them to increase. Early treatment, high detection at early stages of the disease and, as a consequence, the provision of medical care within the therapeutic window is a direct factor in outcomes: prevention of complications, further disability, mortality, as well as an indicator of the efficiency and organisation of medical care in the district. The indicators of mortality, disability, hospitalisation of patients with acute cerebral circulatory disorders in the acute period in Karaidelsky district reflect the level of organisation of the medical service, which is a socio-economic aspect.

### Conclusion

Thus, the influence of natural environmental factors with different chemical composition on the incidence of cerebrovascular pathology has been clearly revealed. Consequently, in solving the problem of reducing the incidence of cerebrovascular diseases, one of the promising directions is the search for effective systems of protection from unfavourable environmental factors and increasing the adaptive capabilities of the organism.

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