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TENDENCY OF INCIDENCE WITH EPILEPSY IN KAZAKHSTAN

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According to the WHO, epilepsy accounts for approximately 1% of the world's total disease burden, and is fourth on the list of neuropsychiatric disorders, following depression, alcoholism, and cerebrovascular disease, with similar impact to the burden of breast and lung cancer. It affects over 70 million people worldwide and it's characterized by a lasting predisposition to generate spontaneous epileptic seizures and has numerous neurobiological, cognitive, and psychosocial consequences.

Aim. To study the trends of epilepsy incidence in Kazakhstan.

Material and methods: The research material was compiled summary reporting form number 12 of Ministry of Health of the Republic of Kazakhstan on new cases of epilepsy (ICD-10 – G40), established for the first time. A retrospective study was used as the main method for studying the incidence of epilepsy. According to generally accepted methods of biomedical statistics, extensive, intensive and equalized indicators of the incidence of epilepsy were calculated.

Results. For 2009-2018 78,429 new cases of epilepsy were registered in the republic, of which were in children – 47.6%, teenagers – 7.5% and adults – 44.8%. The average annual incidence rate of epilepsy in the entire population of Kazakhstan was 45.6±3.0$^0/_{0000}$ (95% CI=39.7-51.4$^0/_{0000}$), and for population groups having been studied was: in children – 83.2±4.0$^0/_{0000}$ (95%CI=75.4-91.0$^0/_{0000}$), among teenagers – 84.6±6.5$^0/_{0000}$ (95% CI=71.9-97.3$^0/_{0000}$) and the adult population 29.3±2.6$^0/_{0000}$ (95% CI=24.3-34.3$^0/_{0000}$). The difference in incidence between groups was statistically significant. Disease tended to increase in all age groups: in children (T=+5.7%), in adolescents (T=+9.8%) and in the adult population (T=+9.8%).

Conclusion. According to the dynamics, epilepsy incidence in Kazakhstan has a increased tendency. The results obtained are recommended to be taken into account by health authorities when making managerial decisions.
Key words: epilepsy, morbidity, age characteristics, epidemiology, trends, Kazakhstan.

ТЕНДЕНЦИЯ ЗАБОЛЕВАЕМОСТИ ЭПИЛЕПСИЕЙ В КАЗАХСТАНЕ

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По данным ВОЗ, эпилепсия составляет примерно 1% от общего бремени болезней в мире и занимает четвертое место в списке психоневрологических расстройств после депрессии, алкоголизма и цереброваскулярных заболеваний, оказывая аналогичное влияние на бремя рака молочной железы и легких. Она поражает более 70 миллионов человек во всем мире и характеризуется стойкой предрасположенностью к спонтанным эпилептическим припадкам и имеет многочисленные нейробиологические, когнитивные и психосоциальные последствия.
Цель. Изучить тенденции заболеваемости эпилепсией в Казахстане.
Материал и методы: Материалом исследования послужила составленная впервые сводная отчетная форма №12 Министерства здравоохранения Республики Казахстан о новых случаях эпилепсии (МКБ-10 – G40). В качестве основного метода изучения заболеваемости эпилепсией было использовано ретроспективное исследование. В соответствии с общепринятыми методами биомедицинской статистики были рассчитаны экстенсивные, интенсивные и уравненные показатели заболеваемости эпилепсией.
Результаты. За 2009–2018 годы в республике было зарегистрировано 78 429 новых случаев эпилепсии, из которых у детей – 47,6%, подростков – 7,5% и взрослых – 44,8%. Среднегодовой показатель заболеваемости эпилепсией среди всего населения Казахстана составил 45,6±3,0$^0/_{0000}$ (95% ДИ=39.7-51.4$^0/_{0000}$), а для исследуемых групп населения было: у детей – 83,2±4,0$^0/_{0000}$ (95%ДИ=75.4-91.0$^0/_{0000}$), среди подростков – 84,6±6,5$^0/_{0000}$ (95% ДИ=71.9-97.3$^0/_{0000}$) и взрослого населения 29,3±2,6$^0/_{0000}$ (95% ДИ=24.3-34.3$^0/_{0000}$). Разница в частоте встречаемости между группами была статистически значимой. Заболеваемость имела тенденцию к росту во всех возрастных группах: у детей (Т=+5,7%), у подростков (Т=+9,8%) и у взрослого населения (Т=+9,8%).

Выводы. Согласно динамике, заболеваемость эпилепсией в Казахстане имеет тенденцию к росту. Полученные результаты рекомендуется учитывать органам здравоохранения при принятии управленческих решений.

Ключевые слова: эпилепсия, заболеваемость, возрастные особенности, эпидемиология, тенденции, Казахстан.

According to the WHO, epilepsy accounts for approximately 1% of the world's total disease burden, and is fourth on the list of neuropsychiatric disorders, following depression, alcoholism, and cerebrovascular disease, with similar impact to the burden of breast and lung cancer [1]. It affects over 70 million [2,3] people worldwide and it's characterized by a lasting predisposition to generate spontaneous epileptic seizures and has numerous neurobiological, cognitive, and psychosocial consequences [3,4].

Approximately 80% of the world's people with epilepsy live in lowand middle-income countries (LMICs) [2]. Paradoxically, between 50 and 75% of the people with epilepsy in these countries are deprived of the treatment that they should be receiving [5,6,7].

The number of people with epilepsy is expected to increase further due to rising life expectancy worldwide and an increasing proportion of people surviving insults which often lead to epilepsy, such as birth trauma, traumatic brain injury (TBI), infections of the brain, and stroke. The physical, psychological and social consequences of epilepsy impose significant burdens on people living with the condition and their families [2,8,9].

Materials and methods

The material of the study was data from the reporting form No. 12 of the Ministry of Health of the Republic of Kazakhstan on patients with a diagnosis of epilepsy (ICD 10 – G40), established for the first time in their life.

A retrospective study (2009-2018) with descriptive and analytical methods of modern epidemiology was used as the main method for studying the incidence of epilepsy. Extensive and rough indicators of incidence are determined by the generally accepted methodology used in modern statistics. The mean value (M), the mean error (m) and the average annual rates of increase and decrease (T, %), 95% confidence intervals (95% CI) were calculated. The dynamics of incidence indicators have been studied over 10 years, while trends are determined by the least squares method. The geometric mean was used to calculate the average annual growth rates and decrease in the time series. The incidence rates for children in general (up to 15 years), adolescents (15-17 years), adults (18 years and over) and the total population are calculated for 100,000 ($^0/_{0000}$) of the relevant population.

Results. During the study period, in Kazakhstan there were 78,429 new cases of epilepsy are: children (under 15 years) – 37,344 (47.6%), teenagers (15-17 years) – 5915 (7.5%) and adults (18 years and older) – 35,170 cases (44.8%).

The average annual incidence rate of epilepsy among the entire population of Kazakhstan was 45.6±3.0$^0/_{0000}$ (95% CI=39.7-51.4$^0/_{0000}$) and in the dynamics of

incidence tended to increase from 33.5±0.5$^0/_{0000}$ (95% CI=32.6-34.4$^0/_{0000}$) in 2009 to 62.0±0.6$^0/_{0000}$ (95% CI=60.9-63.2$^0/_{0000}$) in 2018, the difference is statistically significant (t=36.49; p=0.000). The above trend remained unchanged when this indicator is had been leveled, and the average annual rate of decline was T=+8.2% (Figure 1).

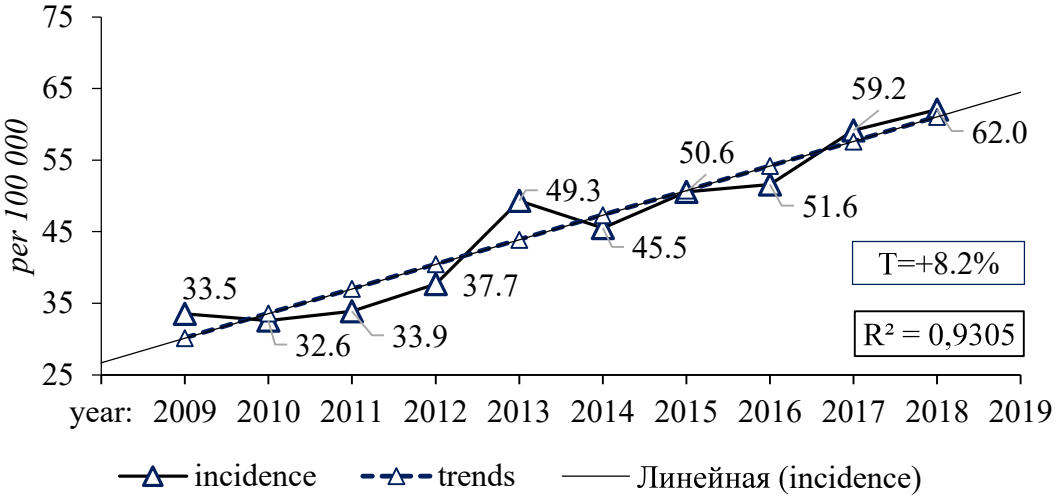

Fig. 1. Dynamics of epilepsy incidence of in the entire population of Kazakhstan for 2009-2018.

The average annual incidence of epilepsy varied among the studied population groups. So, for children it was 83.2±4.0$^0/_{0000}$ (95% CI=75.4-91.0$^0/_{0000}$), for adolescents and adults it had been 84.6±6.5$^0/_{0000}$ (95% CI=71.9-97.3$^0/_{0000}$) and 29.3±2.6$^0/_{0000}$ (95% CI=24.3-34.3$^0/_{0000}$), respectively (Figure 2).

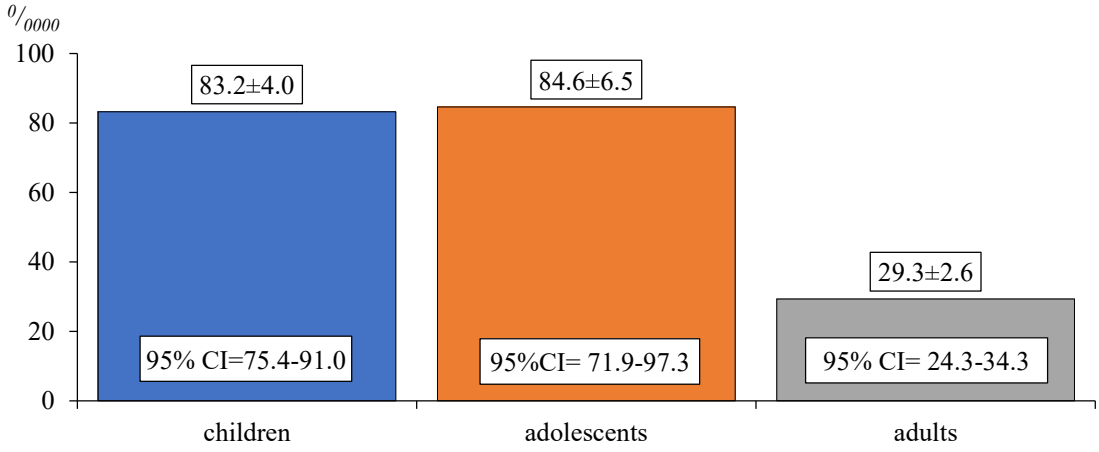

Fig. 2. Average annual incidence of epilepsy in the studied population groups in Kazakhstan for 2009-2018.

According to the graph, the incidence epilepsy in the childish population of Kazakhstan increased from 73.3±1.4$^0/_{0000}$ (95% CI=70.6-76.0$^0/_{0000}$) to 110.5±1.5$^0/_{0000}$ (95% CI=107.6-113.4$^0/_{0000}$) for the time period of 2009−2018, the changes are

statistically significant (t=18.13; p=0.000), and the average annual rate of growth was T=+5.7% (Figure 3).

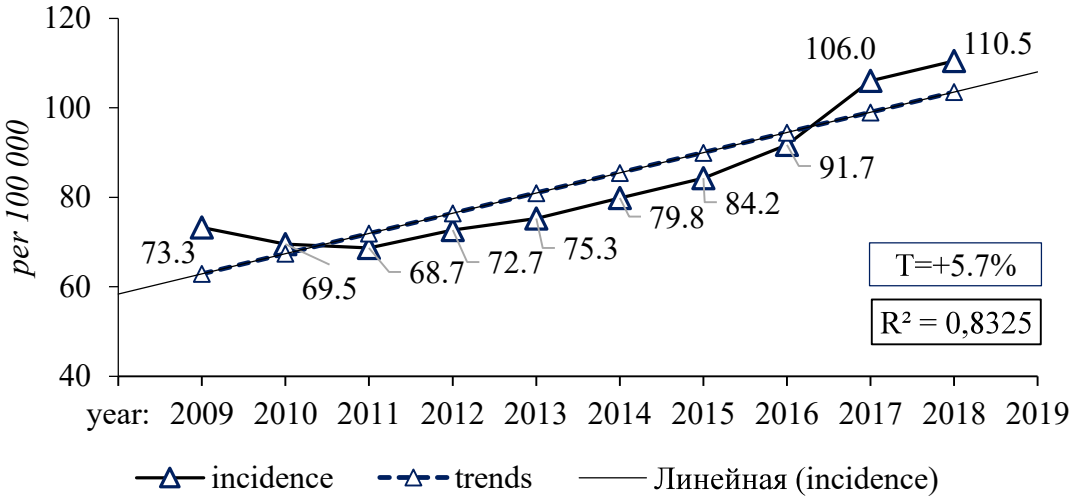

Fig. 3. Dynamics of the incidence of epilepsy in the childish population of Kazakhstan for 2009-2018.

The incidence of epilepsy among adolescents increased from 51.5±2.4$^0/_{0000}$ (95% CI=46.8-56.2$^0/_{0000}$) in 2009 to 111.1±4.3$^0/_{0000}$ (95% CI=102.6-119.6$^0/_{0000}$) in 2018, also the difference is statistically significant (t=12.10; p=0.000). Also, the average annual rate of growth was T=+9.8% (Figure 4).

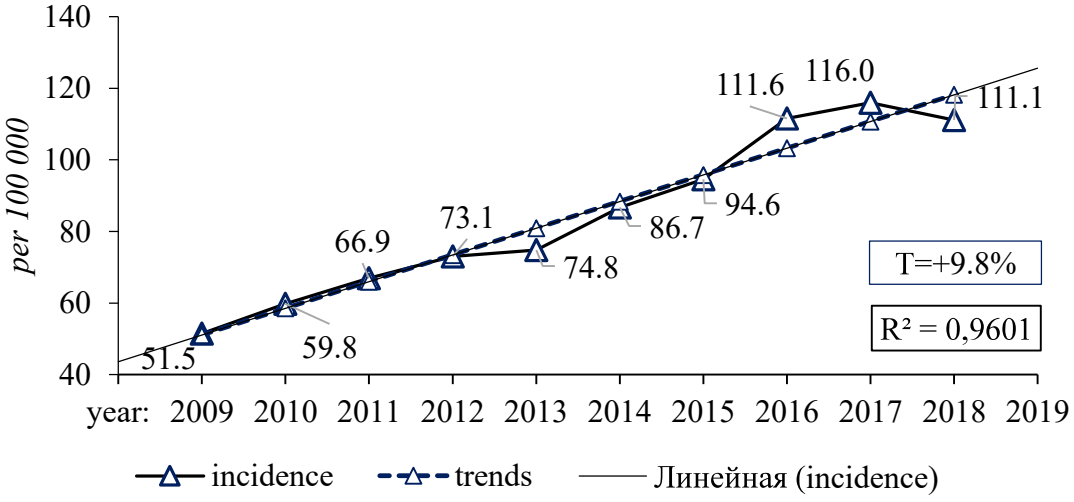

Fig. 4. Dynamics of the incidence of epilepsy in the adolescent population of Kazakhstan for 2009-2018.

In dynamics, the incidence of epilepsy in the republic increased among the adult population: from 18.5±0.4$^0/_{0000}$ (95% CI=17.7-19.3$^0/_{0000}$) in 2009 to 39.8±0.6$^0/_{0000}$ (95% CI=38.7-40.9$^0/_{0000}$) in 2018 and the difference in these years is statistically significant (t=29.54; p=0.000). The average annual rate of growth was T=+9.8% (Figure 5).

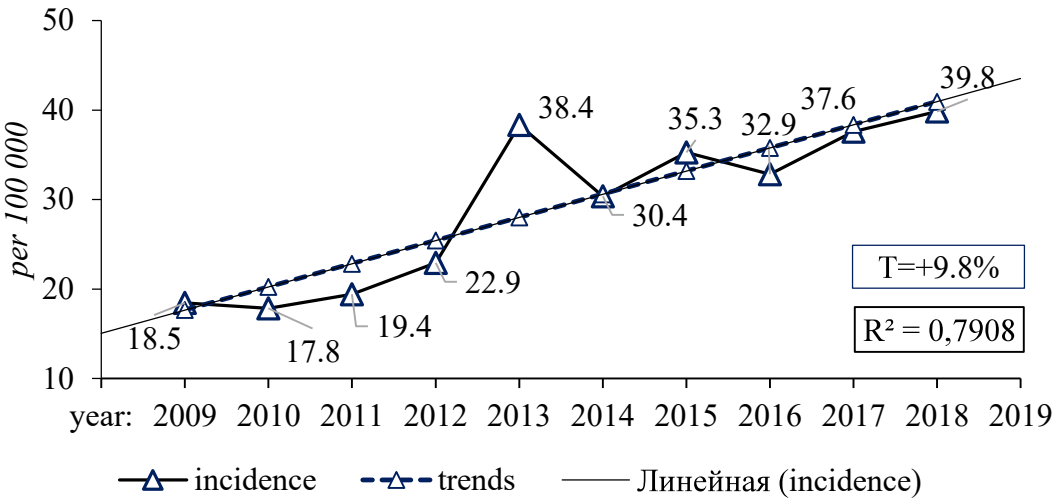

Fig. 5. Dynamics of the incidence of epilepsy in the adult population of Kazakhstan for 2009-2018.

Conclusion. Trends in the incidence of epilepsy in various studied groups of the population allowed us to assess and identify a general increasing trend. In Kazakhstan, over the years under study, the incidence among children under 15 years old (T=+5.7%), adolescents (15-17 years old) (T=+9.8%) and the adult population (T=+9.8%) tended to increase.

The increase in the number of patients suffering from epilepsy, and most importantly the proportion of children, cause us concern. As the seizures leads to regression of cognitive and behavioral skills of children [10], many children with these severe epilepsies have major developmental problems. They have a “developmental encephalopathy” that could be exacerbated by an “epileptic encephalopathy” [11]. More importantly, there are a number of other serious medical and psychiatric disorders that dominate the adult lives of some of these patients, disorders that are not as prominent during childhood.

The benefits from rapid pharmacological and technological developments in the field of epilepsy have not as quickly been realized in lesser developed countries, mostly due to the cost of these advances. Given the burden of epilepsy, a broad public health approach is needed to improve the care and quality of life of people with epilepsy.

To optimize effective diagnosis, treatment and dispensary observation, it is necessary to create a unified information and analytical system for monitoring and assessing this disease.

Research transparency

Research did not have a sponsorship. The authors are absolutely responsible for presenting the release script for publication.

Declaration about financial and other relations

All authors took part in elaboration of article conception and writing the script. The release script was approved by all authors. The authors did not get the honorary for the article.

Conflict of interest

The authors declare no conflict of interest.

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