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STROKE AND HYPERTENSION

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Abstract: In recent decades, significant changes have occurred in the health status and nature of the pathology of the population of most economically developed countries of the world. Basically, these changes consist of unusually rapid changes in public health indicators for the history of mankind and transformation of pathology. There is a steady trend towards a decrease in mortality from a number of infectious and parasitic diseases, and a significant increase in the proportion of chronic non-infectious diseases. These changes occurred during the life of just one generation and led to a significant change in the structure of population mortality. This indicator is currently dominated by three groups of diseases: coronary artery disease (IHD), cerebrovascular diseases (CVD) and malignant neoplasms, which together account for more than half of all deaths [1].

Key words: hypertension, stroke, statistics, complications.

According to WHO, in 1996, a total of 52 million people died in the world. Of these, 15.3 million deaths are caused by diseases of the circulatory system (CVD), including ischemic heart disease - 10.7 million and CVD - 4.6 million. 6.3 million of all deaths are associated with oncological pathology. The structure of mortality among the population of economically developed countries of the world differs significantly from the global structure given above - BSKs come out on top and account for 45.6% of all deaths. The second most important cause of death is cancer – 21.0% [2].

Along with changes in the structure of population mortality, another stable trend in recent decades has been a decrease in overall population mortality in many countries of the world and, especially, a decrease in mortality from CSD. Thus, R. Bonita (2001) [3] notes the evolution of cerebrovascular pathology: at the beginning of the previous century, acute cerebrovascular accident (ACVA) was a more common pathology than heart disease, and its structure was dominated by cerebral hemorrhages. Later, the proportion of ischemic stroke and the number of patients with ischemic heart disease began to increase, which became more numerous than those with stroke. Currently, in economically developed countries, mortality from CSD (especially from stroke) is decreasing and the average age of stroke is increasing.

An analysis of the structure of population mortality shows that it corresponds to that in other economically developed countries - mortality rates from CVD (56.1%) and from malignant neoplasms (12.4%) together account for 2/3 of all deaths. The structure of mortality has not changed significantly over the past 8 years. At the same time, in contrast to other European countries, in the structure of mortality after CSD, oncological pathology follows, and mortality from external causes is relatively low (7.5%).

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The average overall mortality rate in 15 European EU member countries is 665.9 per 100 thousand population. In Uzbekistan it is twice as high. The average mortality rate from vascular lesions of the brain in these same countries was 62.3 per 100 thousand population.

Thus, the overall mortality rates of the population are the highest in Europe. This is due to at least three reasons:

• relatively high infant mortality rate, which in 2002 amounted to 13.3 cases per 1000 children born alive (in economically developed countries the rate is 5–9 per 1000);

• high premature mortality from CSD;

• extremely high male mortality from external causes (accidents, injuries, poisoning, etc.) - 377.3 per 100 thousand men (according to 2002 data).

The important thing is that people die from the same causes at a much earlier age than in the West. In the USA, less than 10% of deaths from CSD occur among people under 65 years of age, while in Russia, up to 30% of people die from CSD in this age group [4].

The average age of stroke development in Russia is 63.1 years for men and 66.3 years for women. This is significantly lower than in Western populations (72.9 years for men and 77.7 years for women) (Feigin V. et al., 1995).

It should also be noted that the differences between mortality rates from CVD in Uzbekistan and other European countries are very large. In our country they are 7.5 times higher than in Switzerland and 5 times higher than in most other European countries. At the same time, the overall mortality rate in Russia, although high, does not differ so significantly. It is higher than in other countries, approximately 2.0–2.5 times.

Mortality statistics from acute myocardial infarction, at first glance, seem paradoxical. In our country, this figure for men in 1990 was 49.1 (per 100 thousand population), which is significantly lower than in many European countries. Thus, in Finland it is 211.4, in Germany – 127.6, in Greece – 108.1. It can be assumed that this is not due to huge differences in mortality rates from myocardial infarction, but solely to a statistical phenomenon, since in Russia many cases of death from myocardial infarction are not specified and are included in the section “other forms of coronary artery disease.” [5].

It should be borne in mind that foreign researchers usually use the terms “mortality from cerebrovascular diseases” and “mortality from stroke” as synonyms. In 1990, we analyzed the structure of mortality from CVD in Uzbekistan. It turned out that among all cases of death attributed to CVD, a diagnosis of stroke indicating its nature was made in only 20.6% of cases, and an undifferentiated diagnosis of “acute cerebrovascular accident” was made in another 38.6% of cases. In the remaining 40.8% of cases, an uncertain diagnosis of “cerebral atherosclerosis” appeared [6].

As studies in individual regions have shown, these features of domestic statistics continue to this day. Thus, an analysis of official statistics carried out in the city of Termez revealed that in 2000, 1039 people died from cerebrovascular accidents. Moreover, only in 38% of cases, stroke was indicated as the cause of death, and in 62% of cases an uncertain diagnosis was made – “other cerebrovascular diseases” [7].

A special analysis of the validity of the conclusions that cerebrovascular pathology was the cause of death of patients at home was carried out during the implementation of the Stroke Registry program. It has been shown that in half of such cases the diagnosis was not verified [8].

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The data presented make us critical of the official statistics on mortality from CVD and, not without reason, to believe that they may be significantly overestimated.

Objective information about stroke and myocardial infarction, such as morbidity, mortality, mortality, hospitalization rates, the need of patients for rehabilitation care, etc. can only be provided by special studies - the Stroke and Myocardial Infarction Registers.

The total number of acute CVDs turned out to be 10.55 cases per 1000 residents of the corresponding age per year. At the same time, the frequency of cerebral hypertensive crises was 4.1, acute myocardial infarction – 3.5, stroke – 2.6 and transient ischemic attacks – 0.3 cases per 1000 inhabitants per year. The total mortality from acute CVD in this population per year was equal to 1.66 cases per 1000 inhabitants aged 25–64 years.

The studies carried out under the classical program of the Stroke Registry in cities allowed us to obtain new unique information about stroke.

• The incidence of all stroke cases is 2.5–3.5 per 1000 inhabitants per year, and the incidence of primary stroke is 2.0–2.5 per 1000. Calculations based on register data suggest that in Russia more than 400 thousand strokes.

• The incidence of stroke increases significantly with age. This figure is higher in the male population compared to the female population.

• The mortality rate for stroke is about 1 in 1000, or 100 in 100 thousand cases per year. At the same time, for the first time, significant discrepancies were revealed between the data of stroke registries and the official statistics of mortality from cerebrovascular diseases, which turned out to be almost three times higher.

• A high mortality rate of stroke patients has been established - 32–42% of patients die in the acute stage of the disease and 48–63% die by the 1st year from the onset of the disease.

• The number of ischemic strokes prevails over the number of hemorrhagic strokes in a ratio of 5: 1. However, in these studies, to clarify the type of stroke, practically no method was used to differentiate ischemic and hemorrhagic strokes (computed tomography of the head). Therefore, the figures given should be considered as indicative only.

• A high rate of recurrent strokes has been established – 26–32%. This indicator proves the need for the earliest possible start of secondary stroke prevention, along with emergency measures for hospitalization and treatment of the patient in a specialized medical institution.

• Insignificant proportion of “minor” stroke (only 8–10% of all cases of the disease).

• Low number of hospitalizations for stroke patients (average 40–52%).

• Analysis of the restoration of functions impaired due to stroke showed that a year after the development of the disease, 5–13% of patients are completely dependent on the help of others. 23% of people of working age return to work.

Arterial hypertension (AH) is the most important correctable risk factor for acute and chronic forms of cerebrovascular accidents (hemorrhagic and ischemic strokes, as well as transient cerebrovascular accidents and vascular dementia). [9].

There is a direct, continuous relationship between blood pressure levels and the risk of cardiovascular disease: the higher the systolic (SBP) and/or diastolic blood pressure (DBP) values (in all ranges of their values, including “normal” values), the higher the risk of both stroke and and myocardial infarction. Therefore, the criteria for diagnosing hypertension based on blood pressure levels are conditional, based mainly on the results of studies on the prevention of cardiovascular complications and are periodically adjusted. For a long time (in the 60–80s of the twentieth

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century), when basic data were obtained on the importance of hypertension as a risk factor for ischemic heart disease and stroke and the high effectiveness of controlling this disease, hypertension was diagnosed at a blood pressure level of 160/95 mm Hg. Art. and higher. Subsequently, in accordance with WHO recommendations of 1993, the criteria for hypertension changed and became the following for persons aged 18 years and older: SBP 140 mm Hg. Art. and above and/or DBP 90 mm Hg. Art. and higher. Since blood pressure is a variable value, to diagnose hypertension it is necessary to confirm the increase in blood pressure by repeating its measurements on different days.

The levels of both SBP and DBP are closely related to the development of stroke. Risk of stroke in patients with blood pressure more than 160/95 mm Hg. Art. increases approximately 4 times compared to persons with normal blood pressure, and with blood pressure more than 200/115 mm Hg. Art. – 10 times.

At the same time, the majority of people with hypertension in the population are patients with “mild” hypertension (grade I). Therefore, the total number of strokes in the population that developed in people with “mild” hypertension exceeds the number of strokes in patients with higher blood pressure levels [13].

Our screening of an open population of men aged 40–59 years showed that blood pressure was 160/95 mm Hg. Art. and higher is detected in 30% of men 40–49 years old and in 38% of men 50–59 years old. At the same time, in 65% of patients with hypertension, blood pressure does not exceed 180/105 mm Hg. Art., and only 12% register at the level of 200/115 mm Hg. Art. and higher [10].

It is of interest to analyze antihypertensive therapy (AHT) before the development of stroke.

According to the Stroke Register, hypertension alone or hypertension in combination with atherosclerosis was present in 78% of patients. Moreover, in the structure of hypertension in stroke patients, a significant place was occupied by “mild” hypertension (according to the 1993 criteria) - it was diagnosed in 61% of people who suffered an ischemic stroke, and in 39% of people with hemorrhagic stroke

Among stroke patients, hypertension was diagnosed in 74%, while 45% did not know about its existence or knew but did not receive AHT.

Hypertension was diagnosed in 68.3% of stroke patients, among whom persons with “mild” hypertension predominated (63.3% of all patients with hypertension). Patients with hypertension were significantly more identified among those with repeated stroke, which developed in them at an earlier age and was clinically more severe. Among patients with hypertension who suffered a stroke, a history of hypertensive cerebral crises was observed in 44.8%. Crises were detected more often in people with repeated strokes or in those who died from a primary stroke. They occurred more often in women. The severity of stroke was greater in hypertensive patients who were not taking antihypertensive drugs (AHD).

In the 2 years preceding the stroke, only 10.3% of patients received constant AHT (BP levels of 140/90 mm Hg and below reached 18.5%), 42% took drugs occasionally, 47% of patients were not treated. Immediately 2 weeks before the onset of stroke, only 18.7% of patients took antihypertensive drugs. Of the patients who were chronically taking medications, 26% stopped treatment several days before the onset of stroke.

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Over the past 10–15 years, convincing evidence has been obtained that treatment of hypertension is an effective prevention of stroke. For the prevention of primary stroke in patients with uncomplicated hypertension, it is extremely important to achieve target blood pressure levels during treatment, with the exception of a number of cases: in elderly patients with hemodynamically significant stenoses of the main arteries of the head and especially in patients with severe cerebrovascular pathology (CVP). They should reduce blood pressure gradually, with target levels determined individually, depending on the state of the hemodynamic reserve of the brain. Continuous long-term treatment is important.

A study of the cerebroprotective properties of various classes of antihypertensive drugs (thiazide diuretics, β-blockers, ACE inhibitors and 2-3 generation dihydropyridine calcium antagonists) did not reveal significant advantages among them. Therefore, each of the drugs in these classes can be used to treat hypertension. In practice, combination therapy is more often used to more effectively control hypertension and achieve target blood pressure.

In recent years, many studies have been carried out to study the cardio-, cerebro-, and nephroprotective properties of angiotensin II receptor blockers. The largest study of this class of drugs was the LIFE study, which was notable not only for the large scale of included patients with hypertension (7.8 million), but also for its study of the medical and economic aspects of the treatment of hypertension as stroke prevention. This study was the largest clinical epidemiological study in Europe in recent years [11]. All 15 EU member countries took part in this scientific work. The study included patients with hypertension aged 55 to 80 years with a blood pressure level ≥160/95–200/115 mm Hg. Art. and severe LVH according to ECG criteria. Exclusion criteria were: secondary forms of hypertension, myocardial infarction or stroke within the last 6 months, angina pectoris requiring the use of β-blockers or calcium antagonists, chronic heart failure or left ventricular ejection fraction [14].

In patients with hypertension whose treatment complex included losartan (Cozaar), significantly fewer cases of stroke were recorded than in patients taking atenolol. These differences were observed after 6 months from the start of treatment, and after 3 years the results of therapy became more significant. At the end of the study, the risk of stroke with ADT that included losartan (Cozaar) was 25% lower than with ADT that included atenolol. At the same time, a comparable antihypertensive effect of the two treatment regimens was observed. This study convincingly demonstrated the possibility of effective prevention of primary stroke in patients with hypertension and LVH using the angiotensin II receptor blocker losartan (Cozaar) both as monotherapy and as part of combined AHT. The study showed a more pronounced effect on the regression of LVH, which is one of the risk factors for stroke, of losartan than of atenolol, which is obviously one of the explanations for the more significant cerebroprotective effect of losartan (Cozaar). In addition, a recently published new subanalysis of the LIFE study by Hoieggen A. et al. put forward a view that explains the more pronounced cerebroprotective effect, reduction in cardiovascular mortality and myocardial infarction by the unique hypouricemic effect of Cozaar [12].

The LIFE study also established the prevalence of hypertension in the European Union. Thus, in Germany it was 60%, in the Netherlands – 34.2%. Mathematical modeling showed that the use of losartan in the treatment of hypertension for 5.5 years could prevent 125,269 cases of stroke, with the greatest effect in countries where hypertension is highly prevalent and where the risk of stroke is correspondingly high (Germany - 35,438, France - 18,430 cases, etc. .d.).

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