
# Impact Of Cognitive Impairment on The Quality Of Life In Older Patients Hastened By Hypertensive Encephalopathy


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**ABSTRACT**

Vascular diseases of the brain remain one of the most acute medical and social problems causing enormous economic damage to society. Among them, cerebral stroke occupies a special place due to the high mortality rate, significant disability and social maladaptation of patients. Stroke doubles the risk of dementia in the elderly.

Arterial hypertension (AH) is the most common disease of the cardiovascular system, which affects about 40% of the adult population in Uzbekistan. In older age groups, the frequency of its occurrence reaches 80%. The disease affects all organs, but the kidneys and brain are most susceptible to pathological changes. Brain damage is caused by tortuosity or stenosis of the carotid arteries, thickening of the intima-media complex, endothelial dysfunction, etc. One of the most common disorders is a lesion of the white matter of the brain — hypertensive encephalopathy (GE)



**Keywords:** Hypertensive encephalopathy, cognitive disorders, old age, neuroprotective therapy


There are currently about 400,000 people over the age of 65 living in the world and their number is expected to increase rapidly in the near future. This demographic trend is characterized as a tendency towards "aging of the population". It is celebrated in most European countries, including Russia. Therefore, prevention and treatment of a large number of age-related diseases are becoming increasingly important in modern medicine [2, 6]. Among the latter, one of the leading places is occupied by neurological and neuropsychiatric disorders caused by both primary disorders of the nervous system and various somatic diseases [1, 3, 4].

It is believed that aging predisposes to the development of disorders of mnestic function [1, 3]. Such changes can be associated with a number of aging-induced changes. Thus, in the process of physiological aging, the brain

undergoes a number of morpho – functional modifications, which in themselves can cause a weakening of memory, attention and other cognitive functions. With age, neuronal plasticity decreases – the ability of neurons in the brain to change their functional properties depending on changing environmental conditions. This leads to a decrease in the compensatory capabilities of the brain in various pathological conditions. Old age itself is a strong and independent risk factor for the development of various vascular and degenerative diseases, which are accompanied by memory impairment [3, 5]. But in most works, indicators of cognitive activity of patients with hypertension or with varying severity of atherosclerotic changes in cerebral vessels are taken into account, without taking into account the state of higher brain functions of persons living to old age without the development of gross pathology, subordination to the general laws of the aging process. These facts determine the interest in the study of cognitive functions of older people, depending on the severity of involutive changes.

**Objective:** to evaluate the modification of cognitive functions in patients with physiological and pathological types of aging at different stages of late ontogenesis.

**Materials and methods of research.** A survey of 90 patients suffering from stage II, grade II GB was conducted: 30 middle–aged patients (mean calendar age (SLE) – 52.18±3.11 years), 30 elderly (SLE – 69.81±3.15 years), 30 senile persons (SLE - 81.14±3.53 years).

The comparison groups included practically healthy people: 30 middle–aged people (SLE – 49.97±1.81 years), 30 elderly (SLE - 68.31±2.46 years), 30 subjects older than 75 years (SLE – 78.33±1.54 years).

The diagnosis of hypertension and the degree of hypertension were established based on the criteria for their diagnosis, adopted by WHO together with the International Society of Hypertension (NHO-ISN), taking into account the recommendations of experts from the Scientific Society for the Study of Arterial Hypertension of the All-Russian Scientific Society of Cardiology and the Interdepartmental Council on Cardiovascular Diseases (2013).

The exclusion criteria were symptomatic hypertension, clinically pronounced atherosclerosis of any localization, chronic heart failure of functional classes III-IV in accordance with the classification of the New York Cardiological Association (NYHA), cardiac arrhythmias, hemodynamically significant heart defects, acute cerebrovascular accident and myocardial infarction in the anamnesis, and people with obesity and disorders were excluded lipid metabolism, diabetes mellitus, concomitant pathology of the kidneys, liver, thyroid diseases, systemic connective tissue diseases, anemia, malignant neoplasms, pathology of the respiratory and gastrointestinal tract in the acute stage.

To assess the dynamics of modulation of higher brain functions, a MoCA test was used, which includes an assessment of visual-constructive functions, memory, attention, counting, speech, abstract thinking, orientation. Statistical processing of the obtained results was carried out using Microsoft Excel 2007 programs. To determine the significance of the differences in the examined groups, the Student's criterion was used for a known number of observations (t). The results were considered statistically reliable at $p<0.05$. To assess the strength of the connections between different indicators of hemostasis, a correlation analysis was performed with the calculation of the Pearson correlation coefficient. With its values in the range from 0.2 to 0.4, correlations were considered weak, in the range from 0.4 to 0.6 – average, more than 0.6 – strong.

**The results of the study and their discussion.** It was found that all practically healthy subjects aged physiologically. Their BV exceeded the DBV value by less than 5 years in all age groups.

Among patients with hypertension, the biological age significantly exceeded the same indicator of the examined comparison groups, reaching 55.72±0.61 years in the contingent with GB of middle age (DBV=41.45±0.44 years) ($p<0.001$), 63.82±0.67 years in the elderly (DBV=51.91±0.29 years) ($p<0.001$), 86.87±0.91 years in the observed senile age

(DBV=58.30±0.71 years) (p<0.001). Thus, the combination of the chronic damaging effects of hypertension and aging led to a progressive acceleration of the rate of development of involutive changes, the formation of a pathological type of aging.

The duration of the disease of arterial hypertension was 4.13±0.27 years in the middle age group, 7.95±0.25 years in the elderly, 15.72±0.43 years in the group of senile patients.

When assessing cognitive functions, the total number of MoCA test scores obtained by practically healthy patients was 28.18±0.27 points in middle-aged people, 26.86±0.23 points in the elderly (p>0.05), 26.63±0.19 in senile people (p>0.05). Thus, the mnestic activity of the contingent of comparison groups remained within the reference values.

The acceleration of involutive changes in the body of patients with GB was accompanied by a significant decrease in the activity of cognitive functions. Thus, the total number of MoCA test scores decreased to 26.97±0.26 points in people 45-59 years old (p>0.05), to 25.84±0.31 points in the 60-74 years old group (p<0.05) and to a maximum of 24.79±0.37 points in patients over 75 years old (p<0.05), accompanied by the development of cognitive deficits. Thus, the treated results confirm the presence of a significant decrease in the activity of higher brain functions in patients suffering from hypertension already at the initial stages of the disease.

The conducted correlation analysis did not reveal significant interdependencies between the parameters of the MoSS test and the biological age of physiologically aging patients, whereas in individuals with accelerated aging, these interdependencies reached an average strength in the middle (r1=-0.57) and the elderly (r2=-0.53), increasing to strong influences of the reverse direction in old age (r3=-0.62).

In patients with hypertension, correlations have been established, which increase with aging, between the length of the disease and the results of the MOS test in both persons younger than 60 years (r1=-0.61), and in the elderly (r2=-0.74), and in the contingent older than 75 years (r3=-0.78), which indicates a pronounced damaging effect long-term damaging effects of high blood pressure. Such changes may indicate both the insufficient adequacy of the antihypertensive therapy and the lack of effective cerebroprotection in older people.

**Conclusions:**

1. Physiological aging is accompanied by the preservation of higher brain functions within the reference values.
2. The combined effect of involutive vascular changes and chronic damaging effects of hypertension led to a significant decrease in mnestic functions and the formation of cognitive deficits.
3. Memory and orientation are the most vulnerable to the effects of involution, which largely determines the difficulties of the daily activities of older people.
4. The acceleration of age-dependent changes against the background of GB also leads to a violation of attention and abstract thinking, which do not change with physiological involution.
5. The results obtained should be taken into account when prescribing adequate antihypertensive therapy with additive cerebroprotective effect to patients with GB of elderly and senile age, in order to prevent premature cognitive impairment, as well as when monitoring its effectiveness.

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