ЗБІРНИК НАУКОВИХ ПРАЦЬ

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М. ЧЕРНІВЦІ, УКРАЇНА

«ТЕХНОЛОГІЇ, ІНСТРУМЕНТИ ТА СТРАТЕГІЇ РЕАЛІЗАЦІЇ НАУКОВИХ ДОСЛІДЖЕНЬ»

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XI МІЖНАРОДНОЇ
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СЕКЦІЯ XVIII.
МЕДИЧНІ НАУКИ ТА ГРОМАДСЬКЕ ЗДОРОВ'Я

СЕКЦІЯ XVIII. МЕДИЧНІ НАУКИ ТА ГРОМАДСЬКЕ ЗДОРОВ'Я

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ASSESSMENT OF COGNITIVE FUNCTIONS IN PATIENTS WITH ARTERIAL HEPERTENSION IN FAMILY PHYSICIAN PRACTICE

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Arterial hypertension (AH) is one of the most prevalent chronic diseases and requires long-term patient follow-up under the medical supervision of a family physician. Although scientific attention is often focused on preventing acute cardiovascular events such as stroke or myocardial infarction, the impact of chronically elevated blood pressure (BP) on cognitive function represents a much deeper problem than previously believed. Elevated BP is recognized as a well-established and modifiable risk factor for age-related cognitive decline. [1, 2].

The increase in life expectancy leads to a growing number of elderly patients with arterial hypertension and, consequently, to a higher demand for medical care. Cognitive and mnestic dysfunctions may distort the medical history data and the nature of patients' complaints obtained by healthcare professionals. Cognitive decline is often complicated by dyscirculatory encephalopathy associated with arterial hypertension, which results in cerebral dysfunction and subsequently increases the financial costs of treatment. [3, 4].

Although proactive detection and management of cognitive impairment can prevent acute decompensation, a study of geriatric patients in emergency departments demonstrated that a substantial proportion of hospitalizations were due to organic brain syndromes that had not been previously diagnosed at the primary care level. [5].

Therefore, it is essential for the family physician to identify mild cognitive impairment in patients with arterial hypertension, as this stage offers the greatest potential for preventing further cognitive decline. In this context, arterial hypertension—especially when combined with other cardiovascular risk factors (such as atrial fibrillation)—acts as a key risk factor that requires proactive management. [6].

Purpose of the study. To determine the importance of assessing cognitive functions in patients with arterial hypertension in the practice of a family physician.

Results and Discussion. The modern medical paradigm integrates the control of arterial hypertension into a broader concept of maintaining brain health, recognizing that elevated blood pressure exerts a destructive effect on the structural and functional integrity of the cerebral vascular system. Today, a growing body of evidence links arterial hypertension not only to vascular pathology but also to neurodegenerative processes underlying Alzheimer's disease. By normalizing blood pressure in patients with arterial hypertension, the family physician implements an intervention aimed at neuroprotection. [7].

Cognitive decline associated with arterial hypertension encompasses a clinical spectrum known as vascular cognitive impairment. This spectrum begins with mild cognitive impairment, which is characterized by subjective and objective cognitive deficits without a significant impact on daily functioning. The stage of mild cognitive impairment carries a high risk of progression to dementia. [8].

Small cerebral vessel disease is the main pathophysiological link connecting arterial hypertension with cognitive decline. Elevated blood pressure is the principal damaging factor that leads to the development of white matter lesions and lacunar infarcts, which are classic markers of vascular cognitive impairment. [9].

Contemporary studies indicate a significant association between vascular and neurodegenerative pathology. The principal mechanism underlying this association is neurovascular dysfunction. Understanding this role of arterial hypertension is key to the development of neuroprotective strategies. [10].

Blood pressure control is a direct intervention in the pathogenetic pathways of neurodegeneration. Although the mechanisms by which these alterations lead to brain damage and contribute to cognitive impairment are not yet fully understood, clinical studies on neurovascular dysfunction emphasize the decisive importance of modifying risk factors, with arterial hypertension being the foremost among them. [11].

Systematic reviews indicate that cognitive impairment associated with arterial hypertension predominantly involves executive function (planning, decision-making, cognitive flexibility), attention and concentration, visuospatial skills, psychomotor abilities (information processing speed), as well as abstract thinking and learning. The key risk factors are the duration and severity of arterial hypertension. According to research data, uncontrolled hypertension in individuals aged 40–60 years is particularly associated with cognitive decline. This underscores the importance of early treatment of arterial hypertension. [12, 13].

Twenty-four-hour ambulatory blood pressure monitoring (ABPM) is of great importance, as it provides a more comprehensive picture by capturing not only single office blood pressure measurements but also circadian fluctuations, daytime and nighttime values, and blood pressure variability. This is particularly relevant because cerebral vessels are highly sensitive to changes in blood pressure and perfusion, and these dynamic characteristics may adversely affect cognitive function. In addition to mean blood pressure levels, blood pressure variability plays a significant role in the pathogenesis of cognitive impairment. Increased 24-hour blood pressure variability, as assessed by ABPM, has been identified as an additional factor contributing to cognitive decline, especially in elderly patients. However, it should be noted that abnormally low blood pressure variability may also increase the risk of cognitive impairment, as it reflects an impaired ability of the brain to adapt cerebral perfusion to metabolic demands. Therefore, 24-hour ABPM in such patients may be of crucial importance. [14, 15].

At present, most leading clinical guidelines, including those of the United States Preventive Services Task Force (USPSTF), adopt a cautious position regarding routine screening of asymptomatic adults for cognitive impairment or dementia, citing insufficient evidence on the balance of benefits and harms. However, from a standpoint of clinical necessity, cognitive assessment is mandatory when the patient, family members, or close contacts express concern about signs of cognitive decline. In such cases, the family physician

should use a standardized, validated assessment tool and should not dismiss these complaints as an inevitable consequence of "normal aging." [16, 17].

The choice of a screening tool for patients with arterial hypertension is crucial, as hypertensive angiopathy causes impairments in specific subcortical domains (executive function, attention), rather than memory alone. The commonly used Mini-Mental State Examination (MMSE), traditionally employed for cognitive assessment, has limited sensitivity for detecting mild cognitive impairment of vascular etiology. [18].

Clinical studies that used the MMSE to assess the effects of blood pressure reduction often failed to detect statistically significant benefits, which may have been due to the insensitivity of this tool to early changes caused by vascular pathology. This limitation prompted comparisons between the Montreal Cognitive Assessment (MoCA) and the MMSE in patients with arterial hypertension. [19].

The results of the study by E. Salvadori et al. showed that early reductions in MoCA scores correlate with the risk of persistent cognitive deficits. This indicates that the MoCA is more sensitive to cognitive impairments of vascular origin. Using the MoCA allows for the identification of patients at an early stage, when vascular factors such as arterial hypertension have not yet led to full-blown dementia, which is crucial for timely therapeutic intervention. [20].

Thus, arterial hypertension is a central, modifiable risk factor in the development of cognitive impairment. Scientific evidence from the past decade has transformed the clinical understanding of this relationship, confirming that hypertension accelerates the pathogenesis of vascular dementia through complex mechanisms of microangiopathy.

Conclusions

1. Elevated blood pressure promotes damage to the brain's small vessels and the development of microangiopathy, leading to vascular cognitive impairment and an increased risk of dementia. Blood pressure control is a primary strategy for neuroprotection.

2. Mild cognitive impairment in patients with arterial hypertension has a high potential for progression, making early detection crucial for the prevention of dementia. The MoCA test is more sensitive than the MMSE for detecting vascular cognitive deficits.

References:

1. Pacholko A, Iadecola C. Hypertension, neurodegeneration, and cognitive decline. *Hypertension*. 2024; 81(5): 991-1007. DOI: 10.1161/HYPERTENSIONAHA.123.21356.

2. Gerasimenko L, Sid E, Lychko V. Characteristics of changes in cognitive functions of the patients with hypertensive disease. *Georgian medical news*. 2017; 272: 80-86. DOI: 10.5281/zenodo.17559816.
3. Sid EV. Psychological characteristics of geriatric patients seeking emergency medical care. *Modern medical technology*. 2018; 1: 96-101. DOI: 10.5281/zenodo.17560904.
4. Theofilis P, Doumani G, Tsatsani GC, et al. The role of hypertension in cognitive dysfunction. *Journal of clinical medicine*. 2024; 13(19): 5979. DOI: 10.3390/jcm13195979.
5. Gettel C, Galske J, Araujo K, et al. Detection and differentiation of undiagnosed dementia in the emergency department: A pilot referral pathway. *Alzheimer's & Dementia*. 2025; 21(4): e70189. DOI: 10.1002/alz.70189.
6. Militaru M, Rachieru C, Lighezan DF, et al. The impact of hypertension and atrial fibrillation on cognitive decline and subclinical atherosclerosis. *Brain Sciences*. 2021; 11(6): 752. DOI: 10.3390/brainsci11060752.
7. Canavan M, O'Donnell MJ. Hypertension and cognitive impairment: a review of mechanisms and key concepts. *Frontiers in Neurology*. 2022; 13: 821135. DOI: 10.3389/fneur.2022.821135.
8. Levine DA, Springer MV, Brodtmann A. Blood pressure and vascular cognitive impairment. *Stroke*. 2022; 53(4): 1104-1113. DOI: 10.1161/STROKEAHA.121.036140.
9. Hainsworth AH, Markus HS, Schneider JA. Cerebral small vessel disease, hypertension, and vascular contributions to cognitive impairment and dementia. *Hypertension*. 2024; 81(1): 75-86. DOI: 10.1161/HYPERTENSIONAHA.123.19943.
10. Santisteban MM, Iadecola C, Carnevale D. Hypertension, neurovascular dysfunction, and cognitive impairment. *Hypertension*. 2023; 80(1): 22-34. DOI: 10.1161/HYPERTENSIONAHA.122.18085.
11. Yaffe K. Prevention of cognitive impairment with intensive systolic blood pressure control. *Jama*. 2019; 321(6): 548-549. DOI: 10.1001/jama.2019.0008.
12. Joyce OC, McHugh C, Mockler D, et al. Midlife hypertension is a risk factor for some, but not all, domains of cognitive decline in later life: a systematic review and meta-analysis. *Journal of Hypertension.* 2024; 42(2): 205-223. DOI: 10.1097/HJH.0000000000003614.
13. De Anda-Duran I, Woltz SG, Bell CN, et al. Hypertension and cognitive function: a review of life-course factors and disparities. *Current opinion in cardiology*. 2022; 37(4): 326-333. DOI: 10.1097/HCO.0000000000000975.
14. Kulbachuk OS, Sid YV, Soloviov OV, et al. The clinical role of daily blood pressure monitoring for the management of patients at the ambulatory stage. *Modern medical technology*. 2025; 17(2): 147-151. DOI: 10.14739/mmt.2025.2.324147.
15. Sible IJ, Nation DA. 24-hour blood pressure variability via ambulatory monitoring and risk for probable dementia in the SPRINT trial. *The Journal of Prevention of Alzheimer's Disease*. 2024; 11(3): 684-692. DOI: 10.14283/jpad.2024.35.
16. Patnode CD, Perdue LA, Rossom RC, et al. Screening for cognitive impairment in older adults: updated evidence report and systematic review for the US Preventive Services Task Force. *Jama*. 2020; 323(8): 764-785.
17. Seitz DP, Chan CC, Newton HT, et al. Mini-Cog for the detection of dementia within a primary care setting. *Cochrane Database of Systematic Reviews*. 2021; 7: CD011415. DOI: 10.1002/14651858.CD011415.pub3.
18. Jia X, Wang Z, Huang F, et al. A comparison of the Mini-Mental State Examination (MMSE) with the Montreal Cognitive Assessment (MoCA) for mild cognitive impairment screening in Chinese middle-aged and older population: a cross-sectional study. *BMC psychiatry*. 2021; 21(1): 485. DOI: 10.1186/s12888-021-03495-6.

19. Webb AJ, Pendlebury ST, Li L, et al. Validation of the MoCA versus MMSE against hypertension and hypertensive arteriopathy after TIA or minor stroke. *Stroke; a journal of cerebral circulation*. 2014; 45(11): 3337-3342. DOI:10.1161/STROKEAHA.114.006309.
20. Salvadori E, Poggesi A, Pracucci G, et al. Longitudinal changes in MoCA performances in patients with mild cognitive impairment and small vessel disease. Results from the VMCI-Tuscany Study. *Cerebral Circulation-Cognition and Behavior.* 2021; 2: 100008. DOI: 10.1016/j.cccb.2021.100008.