Western European Journal of Medicine and Medical Science
Volume 4, Issue 05, May 2026
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

STUDY OF BLOOD PRESSURE VARIABILITY IN PATIENTS WITH DIFFERENT SUBTYPES OF ISCHEMIC STROKE

Alijonova G., Kodirjonova A., Akhmataliyeva M. Yusupova. M T
Tashkent State Medical University, Tashkent Uzbekistan

Abstract. The aim of the study was to assess blood pressure (BP) variability in patients with different subtypes of ischemic stroke and its influence on the course of the disease. Patients with atherothrombotic, cardioembolic, and lacunar stroke were examined using 24-hour ambulatory blood pressure monitoring (ABPM). It was found that BP variability differs depending on the stroke subtype: it was most pronounced in cardioembolic stroke and least pronounced in lacunar stroke. Increased BP variability was associated with more severe neurological deficits and an unfavorable prognosis. Control of BP variability is an important aspect in the management of patients with ischemic stroke.

Keywords: Ischemic stroke, blood pressure variability, ambulatory blood pressure monitoring, stroke subtypes, cardioembolic stroke, atherothrombotic stroke, lacunar stroke, prognosis, neurological deficit

According to the results of studies conducted by the World Health Organization, the Republic of Uzbekistan, like many other countries worldwide, is classified as a country with a high risk of cardiovascular diseases. Statistical studies indicate that mortality from non-communicable diseases in Uzbekistan exceeded 83.5% in 2019, accounting for 702.8 cases per 100,000 population, of which 60.3% were attributed to cardiovascular diseases [1]. Among all registered deaths during January–March 2023, 53.6% were caused by diseases of the circulatory system [2].

It has been proven that arterial hypertension is one of the most significant risk factors for stroke development. It is also well known that elevated blood pressure is recorded in the majority of patients during the acute phase of stroke [3]. Ischemic stroke remains one of the most important and significant problems in modern neurology due to its widespread prevalence, increasing incidence, high mortality, and severe disability among patients. Elevated BP during the first 24 hours after stroke onset is observed in 60–93% of patients [4,8].

Arterial hypertension (AH) and blood pressure variability play a key role in the development and progression of ischemic stroke (IS). When assessing the circadian rhythm of blood pressure, an optimal nocturnal BP reduction is considered to be within 10–20% [5].

Daily BP profiles such as dipper, non-dipper, over-dipper, and night-peaker significantly influence disease prognosis and patient recovery.

1. **Dipper:** In individuals with this pattern, blood pressure decreases by 10–20% at night. This is considered normal and reflects proper autonomic regulation of BP. Consequently, the risk of cardiovascular complications is lower.

Western European Journal of Medicine and Medical Science
Volume 4, Issue 05, May 2026
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

2. **Non-dipper:** In this pattern, nocturnal BP reduction is less than 10%. This profile increases the risk of cardiovascular disease, renal failure, and diabetes mellitus. It is more commonly observed in elderly individuals and patients with chronic kidney disease and is associated with poor cardiovascular prognosis.
3. **Over-dipper:** In this case, BP decreases by more than 20% during the night, which may lead to insufficient organ perfusion. The over-dipper pattern is associated with an increased risk of nocturnal ischemic events, including stroke.
4. **Night-peaker:** Blood pressure increases at night, which is relatively rare and associated with severe arterial hypertension. It is most often observed in patients with endocrine disorders such as obstructive sleep apnea or pheochromocytoma.

The generally accepted classification of pathogenic subtypes of ischemic stroke is the TOAST classification [6,7]. According to this classification, ischemic stroke is divided into five pathogenic subtypes: large-artery atherosclerosis (atherothromboembolic stroke), cardioembolic stroke, small-vessel occlusion (lacunar stroke), stroke of other determined etiology, and stroke of undetermined etiology.

The atherosclerotic subtype develops as a result of atherosclerosis of the major cerebral arteries. Diagnostic criteria include occlusion or stenosis greater than 50% of the lumen of extra- and intracranial arteries. The onset of atherothrombotic ischemic stroke is usually intermittent and gradually progressive. Symptoms may appear over several hours or days. Quite often, the onset occurs during sleep. In such patients, the non-dipper BP profile is more frequently observed, characterized by insufficient nocturnal BP reduction. This may represent a compensatory mechanism aimed at maintaining cerebral blood flow under conditions of chronic ischemia [7].

The cardioembolic subtype develops in patients with atrial fibrillation, valvular heart disease, infective endocarditis, or myocardial infarction as a result of cardiogenic embolism. Computed tomography (CT) and magnetic resonance imaging (MRI) reveal cortical lesions, cerebellar infarction, or subcortical hemispheric infarction larger than 1.5 cm. Patients often have a history of transient ischemic attacks (TIA) and ischemic stroke [7].

In cardioembolic ischemic stroke, moderate BP elevation is observed during the hyperacute period. Based on ABPM findings, it can be assumed that the dipper profile is more common in patients with cardioembolic stroke, which may be associated with the relatively smaller impact of chronic hypertension on their vascular system. However, the night-peaker profile is also observed in patients with severe heart failure, worsening the prognosis.

References:

1. Rothwell P.M. et al. Prognostic significance of visit-to-visit variability in blood pressure // *The Lancet*. 2010.
2. Parati G., Ochoa J.E., Lombardi C., Bilo G. Blood pressure variability: assessment, predictive value, and potential as a therapeutic target // *Hypertension Research*. 2013.
3. Mancia G. et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension // *European Heart Journal*. 2018.
4. Powers W.J. et al. 2019 Guidelines for the early management of acute ischemic stroke // *Stroke*. 2019.

Western European Journal of Medicine and Medical Science
Volume 4, Issue 05, May 2026
https://westerneuropeanstudies.com/index.php/3
ISSN (E): 2942-1918 Open Access| Peer Reviewed

5. Webb A.J.S. et al. Effects of antihypertensive drug class on interindividual variation in blood pressure and risk of stroke // *The Lancet*. 2010.
6. Низамов У.И. Совершенствование методов диагностики и лечения у больных ишемической болезнью сердца на основании оценки факторов риска старения магистральных сосудов. – Ташкент, 2021. – С. 19-20.
7. Аналитические материалы Государственного комитета Республики Узбекистан по статистике - 2023 год
8. **Коррекция артериального давления в остром периоде инсульта** *Кузнецов А.Н.*
9. Парфенов В.А., Вахнина Н.В. Артериальная гипертония и гипотензивная терапия при ишемическом инсульте. Неврологический журнал 2001; 4: 19–22.
10. Суточное мониторирование артериального давления А.В. Стародубова , А.А. Копелев
11. Adams H.P., Bendixen B.H., Kappelle J. et al. Classification of subtype of acute ischemic stroke. Stroke 1993:24;35–41.
12. Pizova NV. Подтипы ишемических нарушений мозгового кровообращения в молодом возрасте: диагностика и лечение. Неврология, нейропсихиатрия, психосоматика. 2012;4(4):34-38.
13. АРТЕРИАЛЬНОЕ ДАВЛЕНИЕ В ОСТРОМ ПЕРИОДЕ ИШЕМИЧЕСКОГО ИНСУЛЬТАТекст научной статьи по специальности «Клиническая медицина»
14. Маджидова, Я. Н., Алимова, Н. У., & Хасанова, Н. О. (2021). КЛИНИКО-НЕЙРОФИЗИОЛОГИЧЕСКИЕ ОСОБЕННОСТИ НЕЙРОКОГНИТИВНЫХ РАССТРОЙСТВ У ДЕТЕЙ И ПОДРОСТКОВ С САХАРНЫМ ДИАБЕТОМ 1 ТИПА. *Re-health journal*, (2 (10)), 72-78.
15. Okilovna, H. N., & Tojiboevna, O. M. (2025). The Effect of HbA1c on Cognitive Functions in Children with Type 1 Diabetes Mellitus. *INTEGRATION OF EDUCATION AND SCIENCE: GLOBAL CHALLENGES AND SOLUTIONS*, *1*(2), 914-915.
16. Исламова, М. С., & Акбарова, Г. П. (2025). ОЖИРЕНИЕ: МНОГОФАКТОРНОСТЬ ПАТОГЕНЕЗА И АССОЦИИРОВАННЫЕ ЗАБОЛЕВАНИЯ (ОБЗОР).
17. Нуриддинов, Э. З. (2019). Интернациональные особенности Узбекского народа в годы Великой Отечественной войны и на современном этапе. *Эшелоны идут на Восток. Эвакуация в Узбекистан в годы Великой Отечественной войны. Оренбург–Ташкент*, 44-47.
18. Исламова, М. С., Сабиров, М. А., & Даминова, К. М. (2021). Лептин-перспектива для диагностики ренального поражения при ожирении.
19. Исламова, М., & Даминова, К. (2022). Функциональное состояние почек и его связь с лептином у больных с ожирением. *Медицина и инновации*, (2), 249-257.
20. Шоахмедова, К., Сабиров, М., & Бабаджанов, Ж. Б. (2019). Влияние хронической болезни почек на состояние полости рта. *Stomatologiya*, *3*(76), 36-40.
21. Исмаилова, М. У., & Ашурова, Д. Т. (2025). ПРОБЛЕМА БОЛИ И ОБЕЗБОЛИВАНИЯ В ПЕДИАТРИИ. *Вестник Ассоциации Пульмонологов Центральной Азии*, *13*(8), 223-226.
22. Ашурова, Д. Т., Исмаилова, М. У., & Шарипова, З. У. (2025). СОВРЕМЕННЫЕ ВЗГЛЯДЫ НА ИНФУЗИЮ КРИСТАЛЛОИДОВ У ДЕТЕЙ, НАХОДЯЩИХСЯ В ИНТЕНСИВНОЙ ТЕРАПИИ. *Журнал гуманитарных и естественных наук*, (27), 98-103.
23. Ашурова, Д. Т., & Исмаилова, М. У. (2026). РЕСПИРАТОРНЫЙ ДИСТРЕСС-СИНДРОМ НОВОРОЖДЕННЫХ: ДИАГНОСТИКА И СТРАТЕГИЯ ЛЕЧЕНИЯ. *Журнал гуманитарных и естественных наук*, (31 [2]), 134-139.