

CEREBRAL INFARCTION OR ISCHEMIC STROKE AND ITS CAUSES**Madmarov Doniyorbek Abdumuxtor O'g'li**

Central Asian Medical University

Assistant of the Department of “Pathology and Forensic Medicine”

Annotation: Cerebrovascular accidents, commonly known as strokes, are prevalent across patient populations and can be a significant cause of morbidity and mortality. Stroke, a cerebrovascular accident, is prevalent across patient populations and can be a significant cause of morbidity and mortality. Strokes can be categorized as ischemic, hemorrhagic, or subarachnoid.

Key words: Ischemic stroke, atherosclerotic disease, arterial dissection, fibromuscular dysplasia, Middle Cerebral Artery (MCA), Anterior Cerebral Artery (ACA).

The etiology of ischemic stroke is due to either a thrombotic or embolic event that causes a decrease in blood flow to the brain. In a thrombotic event, the blood flow to the brain is obstructed within the blood vessel due to dysfunction within the vessel itself, usually secondary to atherosclerotic disease, arterial dissection, fibromuscular dysplasia, or inflammatory condition. In an embolic event, debris from elsewhere in the body blocks blood flow through the affected vessel. The etiology of stroke affects both prognosis and outcomes.

In thrombosis, there is an obstructive process that prevents blood flow to some regions of the brain. Risk factors include atherosclerotic disease, vasculitis, or arterial dissection. Embolic events occur when there is a clot that originated from another location in the body. Most commonly, the source of the clot is the valve or chambers of the heart, for example, when a clot forms within the atria in atrial fibrillation and dislodges into the arterial vascular supply.

Other less frequent causes include venous, septic, air, or fat emboli. Lacunar infarcts are usually seen in the subcortical areas of the brain and occur due to small vessel disease. The proposed mechanism is a perforating artery in the subcortical region that causes the blood vessel occlusion. Ischemic strokes can present in pre-determined syndromes due to the effect of decreased blood flow to particular areas of the brain that correlate to exam findings. This allows clinicians to be able to predict the area of the brain vasculature that can be affected.

The middle cerebral artery (MCA) is the most common artery involved in stroke. It supplies a large area of the lateral surface of the brain and part of the basal ganglia and the internal capsule via four segments (M1, M2, M3, and M4). The M1 (horizontal) segment supplies the basal ganglia, which is involved in motor control, motor learning, executive function, and emotions. The M2 (Sylvian) segment supplies the insula, superior temporal lobe, parietal lobe, and inferolateral frontal lobe. The MCA distribution involves the lateral cerebral cortex. MCA syndrome is best explained by the understanding of the somatosensory cortex, in which the lateral portion contains motor and sensory functions that involve the face and upper extremity. This correlates to the classical presentation of contralateral hemiparesis, facial paralysis, and sensory loss in the face and upper extremity. The lower extremity may be involved, but upper

extremity symptoms usually predominate. Gaze preferences towards the side of the lesion may be seen. Additional symptoms include:

- Dysarthria is characterized by difficulty phonating words due to the physical weakness of the muscles of the face used for phonation.
- Neglect where the patient seems to “ignore” a hemisphere of their world due to an inability to see that area.
- Aphasia or the inability to produce or remember words due to injury to the verbal centers of the brain.

Anterior Cerebral Artery (ACA) Infarction

The anterior cerebral artery (ACA) provides blood supply to the frontal, prefrontal, primary motor, primary sensory, and supplemental motor cortices. Pure ACA infarcts are uncommon because of the significant collateral blood supply provided by the anterior circulating artery. The sensory and motor cortices receive sensory information and control movement of the contralateral lower extremity. The supplemental motor area contains the Broca area, which is involved in the initiation of speech. The prefrontal cortex is used to organize and plan complex behavior and is thought to influence the personality. The ACA distribution involves the medial cerebral cortex. The somatosensory cortex in that area comprises motor and sensory functions of the leg and foot. The clinical presentation of an ACA infarction includes contralateral sensory and motor deficits in the lower extremity. The upper extremity and face are spared. Right-sided lesions presented with a more acute confusional state and motor hemineglect (unilateral motor function is lost).

Posterior Cerebral Artery (PCA) Infarction

The superficial posterior cerebral artery (PCA) supplies the occipital lobe and the inferior portion of the temporal lobe, while the deep PCA supplies the thalamus and the posterior limb of the internal capsule, as well as other deep structures of the brain. The occipital lobe is the location of the primary and secondary visual areas, where sensory input from the eyes is interpreted. The thalamus relays information between the ascending and descending neurons, while the internal capsule contains the descending fibers of the lateral and ventral corticospinal tracts. PCA infarctions can be divided into deep and superficial categories, based on the PCA supply. If the deep segments of the PCA are involved, symptoms may include hypersomnolence, cognitive deficits, ocular findings, hypoesthesia, and ataxia. Ocular findings may include homonymous hemianopsia, in which patients experience visual field deficits in one-half of their visual field. Larger infarcts that involve the deep structures can lead to hemisensory loss and hemiparesis due to the involvement of the thalamus and the internal capsule. Superficial infarcts present with visual and somatosensory deficits, which can include impairment of stereognosis, tactile sensation, and proprioception. Rarely, bilateral PCA infarcts present with amnesia and cortical blindness. Cortical blindness is due to lesions in the optic radiation that causes vision loss. A unilateral headache is a common finding, which can be confused with a complicated migraine.

Vertebrobasilar Infarction - the vertebrobasilar region of the brain is supplied by the vertebral arteries and the basilar arteries that originate within the spinal column and terminate at the Circle of Willis. These areas supply the cerebellum and brainstem. The clinical presentation includes

ataxia, vertigo, headache, vomiting, oropharyngeal dysfunction, visual-field deficits, and abnormal oculomotor findings. Patterns of clinical presentation vary depending on the location and the infarction pattern of embolism or atherosclerosis.

Cerebellar Infarction - patients may present with ataxia, nausea, vomiting, headache, dysarthria, and vertigo symptoms. Edema and rapid clinical deterioration can complicate cerebellar infarction.

Lacunar infarcts - result from the occlusion of a small perforating artery. The exact mechanism is under debate, as the nature of the infarct can result from intrinsic vessel occlusion or an embolism. Infarction in this territory can present with pure motor or sensory loss, sensorimotor deficit, or ataxia with hemiparesis.

Conclusion: ischemic stroke disease is a serious pathological process, and knowing the factors that cause the disease is important for choosing the right tactics in the treatment of the disease. A stroke can lead to long-term coma, paralysis or paresis of the muscles of certain parts of the body, and in severe cases, it can lead to death.

Reference:

1. Nasirdinov, M., & Ermatov, N. J. (2022). TREATMENT PROCEDURES FOR ANEMIA IN EXPERIMENTAL ANIMALS WITH LOCAL VEGETABLE PROTEIN PRODUCTS. *Central Asian Journal of Medicine*, (3), 72-79.
2. Эрматов, Н. Ж., & Насирдинов, М. (2022). Treatment procedures for anemia in experimental animals with local vegetable protein products.
3. Mamasiddikovich, S. R., Isroilovna, I. M., Ziyomiddinovich, N. M., & Rakhmatjonovna, I. N. (2020). DIAGNOSIS AND THERAPY OF ATOPIC BRONCHIAL ASTHMA IN COMBINATION WITH ALLERGIC RHINOSINUSITES IN CHILDREN Ferghana branch of the Tashkent Medical Academy. *Journal of Critical Reviews*, 7(8), 1788-1791.
4. IRMATOV, N., & NASIRDINOV, M. NEW DAY IN MEDICINE. NEW DAY IN MEDICINE Учредители: Бухарский государственный медицинский институт, ООО "Новый день в медицине", (3), 9-18.
5. Kamolidinovich, X. D. (2023). Methods for Diagnosing Ureterolithiasis and its Complications in Ct Scans. *AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI*, 2(12), 90-93.
6. Davron, X. (2023). Diagnostic Possibilities of Ultrasound in Polycystosis of the Kidney. *Eurasian Medical Research Periodical*, 20, 43-47.
7. G'aniyevich, R. I. (2023). Formation of National Crafts in the family of Primary School students. *Best Journal of Innovation in Science, Research and Development*, 283-286.
8. Рапиков, И. Г. (2019). Женское семейное членство в обучении учителя. *Научные горизонты*, (4), 85-89.
9. Рапиков, И. Г. (2019). Роль народных подходов к учащимся начальной школы на основе труда, экономики и предпринимательства. доктора/кандидата наук предлагаем вступить в редакционную коллегию журнала (подробности на сайте), 90.
10. Rapikov, I. (2020). SCHOLARS' VIEWS ON THE FORMATION OF SAVINGS AND ENTREPRENEURSHIP ON THE BASIS OF LABOR EDUCATION IN PRIMARY

- SCHOOL STUDENTS. Scientific and Technical Journal of Namangan Institute of Engineering and Technology, 2(11), 309-313.
11. Pulatova, Z., & Ganijonov, H. (2023, June). MODERN VIEWS OF BEHAVIORAL CHANGES IN 16-17-YEAR-OLD STUDENTS. In International Conference on Education and Social Science (Vol. 1, No. 2, pp. 30-32).
 12. Jalolidinova, I. Z. Cellular Changes in Cardiomyocytes Due to Ischemia and Necrosis. JournalNX, 7(04), 1-2.
 13. Болтабоева, Д. И. (2023). ОИВ ИНФИЦИРЛАНГАНЛАРДА ГЕРПЕТИК ИНФЕКЦИЯЛАРИНИ КЛИНИК КЕЧИШ ХУСУСИЯТЛАРИ. Scientific Impulse, 2(13), 174-177.
 14. Азимов, М. Б., & Болтабоева, Д. И. (2021). ОСОБЕННОСТИ КЛИНИЧЕСКОГО ТЕЧЕНИЯ ГЕРПЕТИЧЕСКОЙ ИНФЕКЦИИ ВИЧ-ИНФИЦИРОВАННЫХ БОЛЬНЫХ. In Молодежь, наука, медицина (pp. 14-18).
 15. Маматкулова, М. Т. (2017). Разработка методов и средств объективной оценки достижения целей обучения. Биология и интегративная медицина, (4), 228-235.
 16. Mamatkulova, M. T. (2016). Study to efficiency voluntary inoculation under viral hepatitis A. Биология и интегративная медицина, (2), 88-93.
 17. Маматкулова, М. Т. (2016). Definition of sensitivity of microorganisms to an antibiotic and prophylactics interhospital infectious. Биология и интегративная медицина, (2), 99-109.
 18. Маматкулова, М. Т. (2017). Role bacteriocarrier at salmonelleze-the epidemiological analysis and system of antiepidemic actions. Биология и интегративная медицина, (4), 89-94.
 19. Косимова, З. М. (2023). Информационно-Компьютерная Технология Организации Работы Отдела Переливания Крови В Ферганском Филиале Республиканского Научного Центра Экстренной Медицинской Помощи. Research Journal of Trauma and Disability Studies, 2(4), 7-13.
 20. Madaminjanovna, Q. Z. (2023). Diagnosis and treatment of emphysematous pyelonephritis in diabetic patients. Eurasian Medical Research Periodical, 19, 4-8.
 21. Anvarovna, A. I., & Melibaevna, B. K. (2022). JUVENILE IDIOPATHIC ARTHRITIS. SCIENTIFIC JOURNAL OF RESEARCH IN MEDICINE (SJR), 1(4), 6-8.
 22. Ахмедова, М. М., & Райимова, З. М. (2023). РЕГИОНАЛЬНЫЕ ОСОБЕННОСТИ РАСПРОСТРАНЕННОСТИ АЛЛЕРГИЧЕСКИХ ЗАБОЛЕВАНИЙ У ДЕТЕЙ ПО ДАННЫМ СТАЦИОНАРОВ ГОРОДА ФЕРГАНЫ ЗА 10 ЛЕТ (2007-2016гг.). FORMATION OF PSYCHOLOGY AND PEDAGOGY AS INTERDISCIPLINARY SCIENCES, 2(20), 167-172.
 23. Anvarovna, A. I., Melibayevna, B. X., Maxamatjonovna, R. Z., Zaxriddinoich, I. B., & Islomkulovich, U. M. (2023). The Urgency of Introducing the Service of Complex Early Intervention in Family Clinics. BioGecko A Journal for New Zealand Herpetology, 12(03), 1139-1145.
 24. Ахмедова, М. М. (2023, June). РАСПРОСТРАНЕННОСТЬ СТРУКТУРЫ И ФАКТОРЫ РИСКА РАЗВИТИЯ АЛЛЕРГИЧЕСКИХ ЗАБОЛЕВАНИЙ У ДЕТЕЙ ФЕРГАНСКОЙ ДОЛИНЕ. In INTERDISCIPLINE INNOVATION AND SCIENTIFIC RESEARCH CONFERENCE (Vol. 1, No. 10, pp. 5-11).
 25. Melibayevna, B. X. (2023). Measures to Improve the Quality of Life of Patients with Comorbid Heart Pathology and Increase the Effectiveness of Their Treatment. Scholastic: Journal of Natural and Medical Education, 2(3), 34-36.
 26. N-A, O. I. X., LI, V., & ST K, S. I. OILA.