E CONF SERIES

International Conference on Modern Science and Scientific Studies
Hosted online from Madrid, Spain
Website: econfseries.com 20th June 2025

THE ROLE OF MULTISLICE COMPUTED TOMOGRAPHY IN THE DIAGNOSIS OF CEREBRAL STROKE

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Annotation
This annotation describes the importance of multislice computed tomography in the diagnosis of stroke. This imaging technology allows for fast and accurate evaluation of blood vessels and cerebral blood flow. Through non-contrast computed tomography, computed tomography angiography, and perfusion computed tomography, it is possible to determine the type and severity of the stroke. Automated software helps analyze results quickly and supports timely treatment decisions. Recent clinical studies have shown that this method is effective in selecting patients for endovascular treatment.

Keywords: multislice computed tomography, cerebral stroke, perfusion imaging, computed tomography angiography, acute ischemic stroke, diagnostic imaging

Today, cerebrovascular accidents represent the second leading cause of mortality globally, with approximately 5.5 million deaths annually. Rapid and accurate diagnosis is crucial in stroke management. Multislice computed tomography has greatly improved stroke evaluation by offering detailed imaging of brain structures and blood flow within minutes. The transition from single-slice to multislice systems has enhanced the visualization of vascular anatomy and perfusion. Multimodal computed tomography protocols help differentiate between reversible and irreversible brain damage, guiding treatment decisions. Advances in automated software further support fast and reliable interpretation, making multislice computed tomography essential in modern stroke care.

Multislice computed tomography encompasses three complementary imaging modalities that collectively provide comprehensive stroke evaluation. Non-contrast computed tomography serves as the initial screening examination, rapidly excluding hemorrhagic stroke while identifying early ischemic changes through assessment of tissue density alterations. The sensitivity of modern multislice systems enables detection of subtle hypodensity within thirty minutes of symptom onset, significantly earlier than conventional imaging techniques.

Computed tomography angiography represents the second component, utilizing intravenous contrast administration to visualize cerebrovascular anatomy with exceptional detail. This technique demonstrates superior accuracy in detecting large vessel occlusions, Distal medium vessel occlusions represent 25–40% of all acute ischemic strokes, while simultaneously identifying distal medium vessel occlusions that comprise a substantial proportion of acute ischemic strokes. The rapid acquisition time and widespread availability of computed tomography angiography have established it as the preferred vascular imaging modality in acute stroke protocols. Perfusion computed tomography constitutes the most sophisticated component of multislice computed tomography evaluation, providing quantitative assessment of cerebral blood flow, cerebral blood volume, and mean transit time parameters. Recent successful trials of thrombectomy launched a shift to imaging-based patient selection for stroke intervention, highlighting the paradigm shift toward perfusion-based patient selection criteria. This functional imaging approach enables precise identification of the ischemic penumbra, the tissue region that remains viable but at risk of irreversible damage without prompt reperfusion. Contemporary research demonstrates that additional CT-perfusion imaging in stroke diagnosis significantly improves the diagnostic reliability of residents, establishing its value across different levels of clinical expertise. The automated processing capabilities of modern perfusion computed tomography software generate standardized color-coded maps that facilitate rapid interpretation while minimizing operator-dependent variability. These technological advances have democratized advanced stroke imaging, enabling consistent application across diverse clinical settings. The integration of artificial intelligence algorithms into multislice computed tomography platforms has further enhanced diagnostic capabilities. Machine learning applications automatically identify acute stroke patterns, quantify infarct volumes, and predict clinical outcomes with increasing accuracy. These developments represent a significant advancement in precision medicine approaches to cerebrovascular disease management.

In conclusion, multislice computed tomography has become essential in modern stroke diagnosis, offering rapid and accurate assessment through both structural and functional imaging. It supports timely treatment decisions, including endovascular therapy. Advances in automation and artificial intelligence have improved diagnostic precision. Ongoing technological progress promises even better outcomes through enhanced imaging and analysis.

References:

1. Umarovich, B. M. (2025). DEVELOPING OF VIRAL INFECTIONS IN HEMATOPOIETIC STEM-CELL TRANSPLANT (HSCT) RECIPIENTS. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 468-473.
2. Muhammadiev, S. (2025). HEMIEPIPHYSIODESIS IN PEDIATRIC ORTHOPAEDICS AS A TREATMENT OF KNEE DEFORMITIES. International Journal of Artificial Intelligence, 1(4), 225-227.
3. Pulatjonovna, U. M. (2024). METABOLITE SYNDROME AND COGNITIVE IMPAIRMENT. IMRAS, 7(6), 419-423.
4. Умарова, М., & Кодиржонов, Н. (2022). ТРОМБОЛИТИЧЕСКАЯ ТЕРАПИЯ В ЛЕЧЕНИИ ИШЕМИЧЕСКОГО ИНСУЛЬТА. Theoretical aspects in the formation of pedagogical sciences, 1(5), 218-220.
5. Умарова, М. (2021). МИГРЕН КАСАЛЛИГИ ВА УНИНГ ШОШИЛИНЧ ТЕРАПИЯСИНИ ТАКОМИЛЛАШТИРИШ. ИНТЕРНАУКА, 47, 93.
6. Хошимова, А. Ё. (2018). ВЛИЯНИЕ ЗАГРЯЗНЕНИЯ ОКРУЖАЮЩЕЙ СРЕДЫ НА ЗАБОЛЕВАЕМОСТЬ БРОНХИАЛЬНОЙ АСТМОЙ. Актуальные вопросы современной пульмонологии. Ма, 200.
7. АБДУГАНИЕВА, А. Ё., & ЮЛДАШЕВА, Х. Б. К. ЛАБОРАТОРНАЯ ДИАГНОСТИКА ПРИ COVID-19. ИНТЕРНАУКА Учредители: Общество с ограниченной ответственностью" Интернаука", 37-38.
8. Умарова, М. (2021). ИНСОМНИА ВА МЕТАБОЛИК СИНДРОМНИНГ ЎЗАРО КОМОРБИДЛИГИ МУАММОНИНГ ДОЛЗАРБЛИГИ. Интернаука, (20-7), 29-30.
9. Исмаилов, С. И., & Маматханова, Г. М. (2022). ЭЛЕКТРОННЫЙ ДОКУМЕНТООБОРОТ КАК ВАЖНЕЙШИЙ ФАКТОР ПОВЫШЕНИЯ

ЭФФЕКТИВНОСТИ УПРАВЛЕНИЯ ЗДРАВООХРАНЕНИЕМ. Евразийский журнал медицинских и естественных наук, 2(8), 38-45.
10. Erkinovich, M. B. (2023). Prevention and Modern Treatment of Fatty Embolism in Traumatological Patients. Eurasian Medical Research Periodical, 21, 158-164.
11. Abdujabborova, C. (2024). O'tkir zaharliligini aniqlash" LUPINUS AS". Universal xalqaro ilmiy jurnal, 1(9), 151-157.
12. Abdujabborova, C. (2024). PSORALEA DRUPACEAE BUNGE (PSORALEA KOSTYANKOVA OR AKKURAI) CHEMICAL COMPOSITION AND APPLICATION IN MEDICINE. В INTERNATIONAL BULLETIN OF MEDICAL SCIENCES AND CLINICAL RESEARCH (Т. 4, Выпуск 1, сс. 9–14). Zenodo.
13. Erkinovich, M. B. (2025, February). ACCUMULATION OF FLUID IN THE KNEE JOINT. In The Conference Hub (pp. 31-35).
14. Erkinovich, M. B. (2025). EFFECT OF JOINT FLUID ON JOINT ACTIVITY IN THE BODY. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(2), 256-260.
15. Maxmudovna, M. G., Qizi, S. M. I., & Xasanboyevich, X. S. (2024). VIRAL HEPATITIS DISEASE AND ITS SPREAD AMONG THE POPULATION. THE EXAMPLE OF RISHTAN DISTRICT. Eurasian Journal of Medical and Natural Sciences, 4(1-2), 118-121.
16. Mamatkhanova, G. M., & Ismailov, S. I. (2021). Optimization Of Medical Records And Implementation Of Electronic Systems In Healthcare. The American Journal of Medical Sciences and Pharmaceutical Research, 3(01), 193-198.
17. Маматханова, Г. (2021). Оптимизация медицинской учетной документации и внедрение электронных систем в здравоохранение. Общество и инновации, 2(8/S), 61-67.
18. Мурадимова, А. Р. (2019). Нейрофизиологический аспект метаболической терапии хронической церебральной ишемии. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (р. 192).

19. Lutfidin o'g'li, Y. B. (2025). ENDEMIK BUQOQ KASALLIGINI TA’SIRIDAN YO’LDOSH TERMINAL SO’RGICHLARDAGI QON TOMIRLARNING PATOMORFOLOGIK O’ZGARISHLARI. THEORY AND ANALYTICAL ASPECTS OF RECENT RESEARCH, 3(33), 322-325.
20. Lutfidin o‘g‘li, Y. B. (2025). Major Hystologic Types of Lung Cancer. Miasto Przyszłości, 57, 81-86.
21. Yusupov, B., & Xatamova, M. (2025). GIPERTIREOZ TA’SIRIDAN YO’LDOSH TERMINAL SO’RG’ICHLARDAGI QON TOMIRLARNING PATOMORFOLOGIK O’ZGARISHLARI. Modern Science and Research, 4(2), 432-437.
22. Habibullayevna, A. G., & Shavkatjon o’g’li, Q. S. (2025, February). STRUCTURE AND INTRACELLULAR ACTIVITY OF THE DNA-CONTAINING HERPES SIMPLEX VIRUS. In International Educators Conference (pp. 126-132).
23. Мурадимова, А. Р. (2019). КЛИНИКО-НЕВРОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ТЕЧЕНИЯ СО-СУДИСТОЙ ЭПИЛЕПСИИ, ПРОГНОЗИРОВАНИЯ И ЛЕЧЕНИЯ. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 178).
24. Мурадимова, А. Р. (2019). КЛИНИКО-ДИАГНОСТИЧЕСКИЕ АСПЕКТЫ И СОВРЕМЕННЫЕ ПОДХОДЫ К ЛЕЧЕНИЮ СОСУДИСТОЙ ДЕМЕНЦИИ. In Инновации в медицине. Материалы I международной научно-практической конференции-Махачкала, 2019.-Том. II.-232 с. (p. 185).
25. Xojiakbarovna, K. M. (2025). SKLETAL MUSCLE RELAXANTS. PERIPHERALLY ACTING SKLETAL MUSCLE RELAXAXANTS: NEUROMUSCULAR BLOCKERS AND SYNTHETIC COMPETITIVE BLOCKERS. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 509-514.
26. Yevgenevna, S. O. (2025). PREDICTION OF PREECLAMPSIA DEVELOPMENT IN PREGNANT WOMEN WITH OVERWEIGHT AND OBESITY. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 561-568.

27. Isroilova, G. (2023). DEVELOPING THE PRINCIPLES OF STUDYING AND TREATMENT OF VAGINAL DYSBIOSIS DURING PREGNANCY. Modern Science and Research, 2(4), 52-53.
28. Юсупова, Р. Т., & Шаланкова, О. Е. (2020). РЕПРОДУКТИВНОЕ ЗДОРОВЬЕ ДЕВОЧЕК-ПОДРОСТКОВ, ПРОЖИВАЮЩИХ В УСЛОВИЯХ ФЕРГАНСКОЙ ДОЛИНЫ. In Университетская наука: взгляд в будущее (pp. 612-614).
29. Пулатова, Н. С., Йигиталиев, А. Б., & Абдурашидов, А. А. ЭПИДЕМИОЛОГИЯ РАКА ТЕЛА МАТКИ В ФЕРГАНСКОЙ ОБЛАСТИ. 1-SON, 1-JILD IYUL 2022 1-QISM, 29.
30. Эгамбердиев, Д. Э., Абдурашидов, А. А., & Эргашов, У. Ш. ПРОФИЛАКТИКА И МЕТОФИЛАКТИКА МОЧЕКАМЕННОЙ БОЛЕЗНИ.
31. Husanboy, U. (2024). ACUTE HEMORRHAGIC CYSTITIS DISEASE IN CHILDREN AND ITS DEVELOPMENT IN THE CHILD'S DODY. In International Conference on Multidisciplinary Sciences and Educational Practices (pp. 88-94).
32. Умарова, М. (2021). ИНСУЛТДАН КЕЙИНГИ ТАЛВАСА СИНДРОМИ. Интернаука, (18-5), 46-48.
33. Pattoyevich, G. A. (2025). IRON DEFICIENCY ANEMIA IN CHILDREN: EARLY DIAGNOSIS AND MODERN TREATMENT APPROACHES. Web of Medicine: Journal of Medicine, Practice and Nursing, 3(5), 494-501.
34. Ravshanovna, R. Y., & Abduxoliq o'g'li, R. A. (2024). Clinical and Morphological Characteristics and Treatment of Gaucher Disease. Miasto Przyszłości, 49, 1407-1412.