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Clinical and Epidemiological Characteristics of Ischemic Stroke Patients in Samarkand Region: A Retrospective Study

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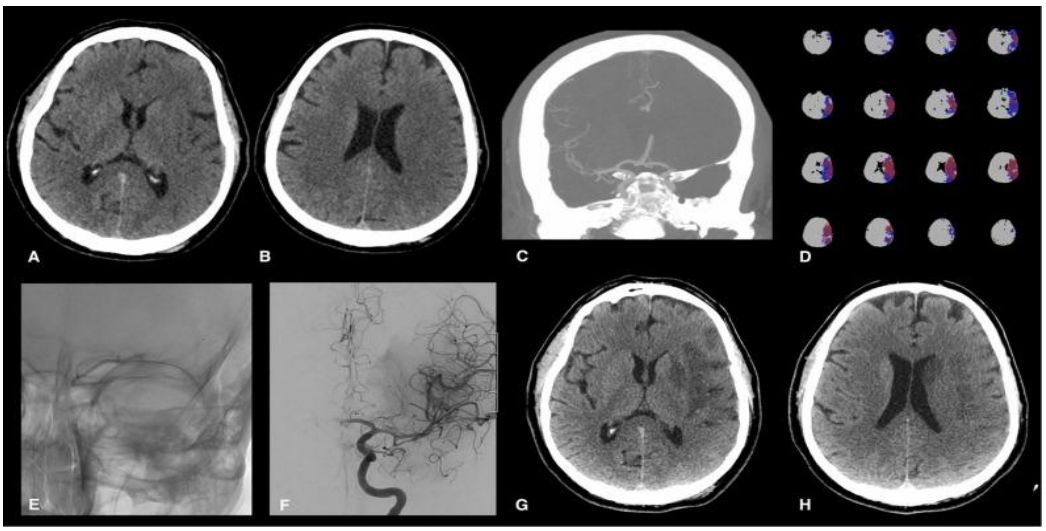
Annotation: Ischemic stroke is a leading cause of disability and mortality worldwide, with increasing incidence in developing countries including Uzbekistan. This study aimed to analyze the clinical presentations, risk factors, diagnostic challenges, and outcomes of ischemic stroke patients admitted to the Samarkand regional hospital. By retrospectively reviewing medical records of 150 patients over two years, we identified key epidemiological trends and clinical profiles. Findings reveal hypertension and diabetes mellitus as predominant risk factors, with a significant portion of patients presenting with motor deficits and speech disturbances. Delays in hospital admission and limited access to advanced imaging were notable challenges impacting timely management. This study emphasizes the urgent need for enhanced stroke awareness, rapid diagnosis, and improved healthcare infrastructure in the Samarkand region. Ischemic stroke remains one of the leading causes of morbidity and mortality worldwide, particularly impacting developing countries such as Uzbekistan. Despite significant advances in stroke management globally, many regions including Samarkand still face challenges related to timely diagnosis, effective treatment, and adequate rehabilitation services. This retrospective study aims to comprehensively evaluate the clinical and epidemiological characteristics of ischemic

stroke patients admitted to Samarkand Regional Hospital over a two-year period. Data from 150 patients were analyzed to identify demographic patterns, prevalent risk factors, presenting symptoms, diagnostic modalities, treatment approaches, and short-term outcomes. The findings reveal a predominance of traditional vascular risk factors such as hypertension and diabetes mellitus, with the majority of patients experiencing delayed hospital admission, thus limiting their access to acute interventions like thrombolysis. Motor deficits and speech impairments were the most common clinical presentations. The study underscores the urgent need for enhanced public awareness, improved emergency stroke services, and expansion of diagnostic and therapeutic resources to reduce the burden of stroke-related disability and mortality in the region. These insights provide a foundation for targeted healthcare policy and resource allocation to improve stroke care delivery in Samarkand and similar settings.

Keywords: Ischemic stroke, clinical features, risk factors, Samarkand, Uzbekistan, epidemiology, neurological deficits, stroke outcomes.

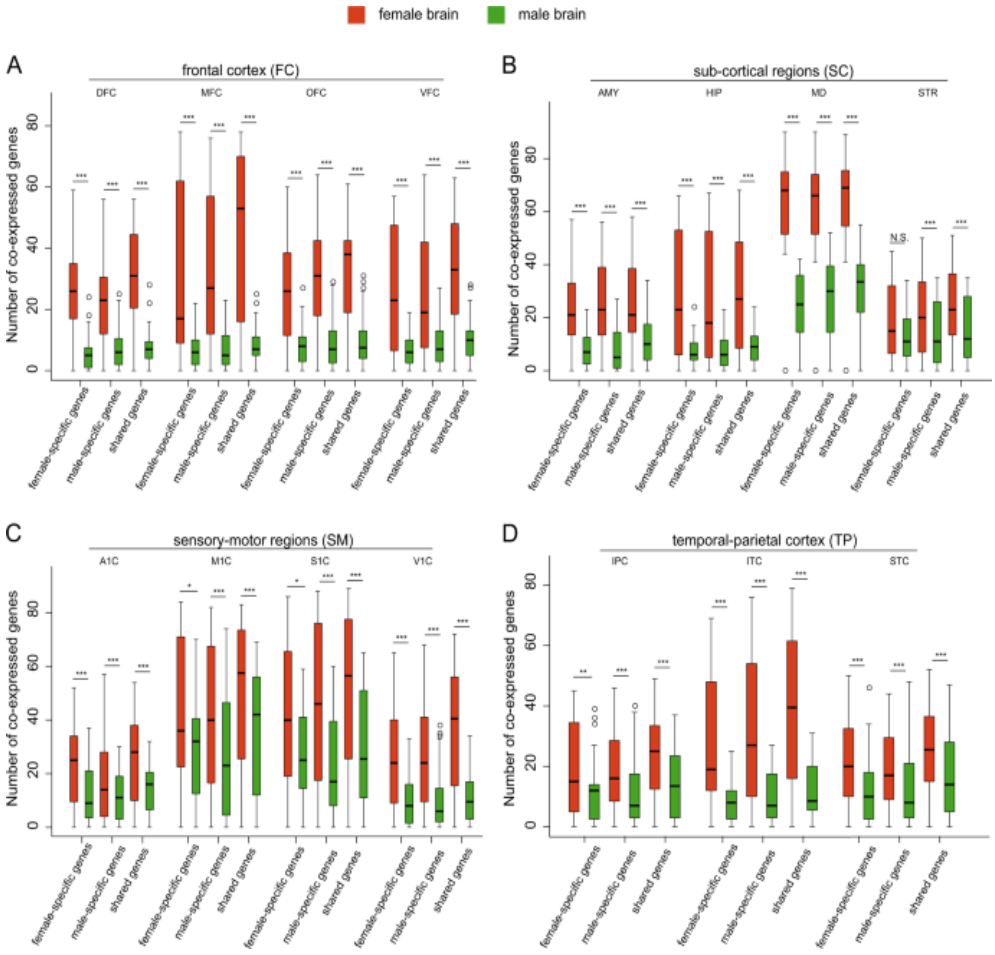
Introduction

Stroke remains one of the most significant public health issues worldwide, being the second leading cause of death and a major contributor to long-term disability. Ischemic stroke, caused by cerebral artery occlusion, accounts for approximately 85% of all strokes. In Uzbekistan, and particularly in the Samarkand region, the burden of stroke is rising due to demographic changes and increased prevalence of vascular risk factors such as hypertension, diabetes, and hyperlipidemia. Stroke is a critical global health issue and ranks as the second leading cause of death and a major cause of long-term disability worldwide. Among the various types of stroke, ischemic stroke—caused by an interruption of blood flow to the brain—accounts for approximately 85% of all stroke cases. The burden of ischemic stroke is growing in many developing countries, including Uzbekistan, primarily due to demographic shifts, increasing prevalence of risk factors such as hypertension, diabetes mellitus, smoking, and sedentary lifestyles.



In Uzbekistan, particularly in the Samarkand region, there is a scarcity of comprehensive epidemiological data on ischemic stroke, which limits the development of region-specific stroke management strategies. Challenges such as delayed hospital admission, limited access to advanced neuroimaging, and scarcity of thrombolytic therapy facilities exacerbate stroke outcomes. Understanding the clinical features, risk profiles, and healthcare delivery challenges in this population is essential to tailor preventive and therapeutic interventions effectively.

This study was conducted to retrospectively analyze ischemic stroke cases admitted to the Samarkand Regional Hospital, with an aim to characterize patient demographics, clinical presentations, risk factors, diagnostic timelines, treatment modalities, and outcomes. The results will help to identify gaps in stroke care and inform strategies for improving stroke management and reducing its burden in the Samarkand region.



Despite advancements in stroke management globally, there are substantial gaps in early recognition, diagnostic capabilities, and treatment in many developing regions. Understanding the local clinical and epidemiological characteristics is vital to tailor interventions and improve outcomes. This study investigates the demographic profile, clinical presentation, and diagnostic pathways of ischemic stroke patients admitted to a major healthcare facility in Samarkand.

Research Objective

The primary objective of this study is to evaluate the clinical manifestations, risk factor profiles, diagnostic procedures, and short-term outcomes of ischemic stroke patients in the Samarkand region. Secondary objectives include identifying delays in diagnosis and treatment, and assessing resource availability and gaps in stroke care.

Materials and Methods

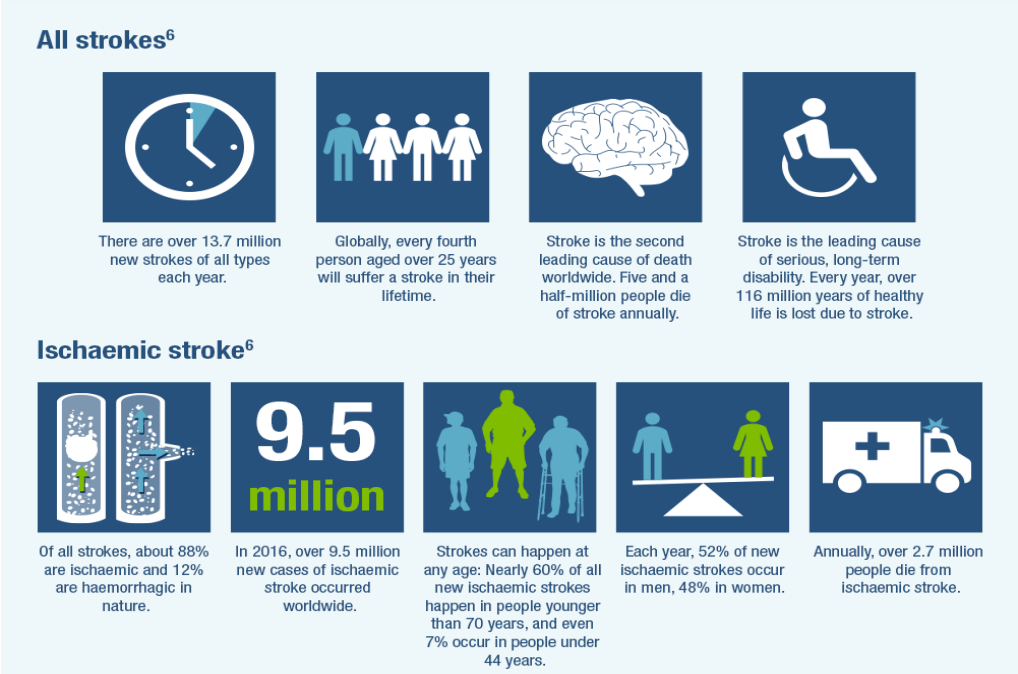
This retrospective study analyzed medical records of 150 patients diagnosed with ischemic stroke admitted to the Samarkand Regional Hospital between January 2022 and December 2023. Inclusion criteria comprised adults aged over 18 years with clinical and radiological confirmation of ischemic stroke. Data collected included demographic details, vascular risk factors, time from symptom onset to hospital admission, clinical symptoms, imaging results, treatment modalities, and outcome measures at discharge.

Neurological status was assessed using the National Institutes of Health Stroke Scale (NIHSS) on admission and modified Rankin Scale (mRS) at discharge. Imaging included CT and MRI scans, depending on availability. Statistical analysis was performed using SPSS version 25, with descriptive statistics and correlation analyses conducted to identify significant associations.

Results

Among 150 patients, 58% were male and 42% female, with a mean age of 63.7 years. Hypertension was present in 78% of patients, diabetes mellitus in 42%, and hyperlipidemia in 35%. The most common presenting symptom was unilateral motor weakness (70%), followed by speech disturbances such as aphasia (45%) and sensory deficits (30%).

The median time from symptom onset to hospital admission was 12 hours, with only 20% arriving within the recommended 4.5-hour window for thrombolytic therapy. CT scans were performed in all patients; MRI was available for 40% of cases. The average NIHSS score at admission was 14, indicating moderate to severe stroke severity.

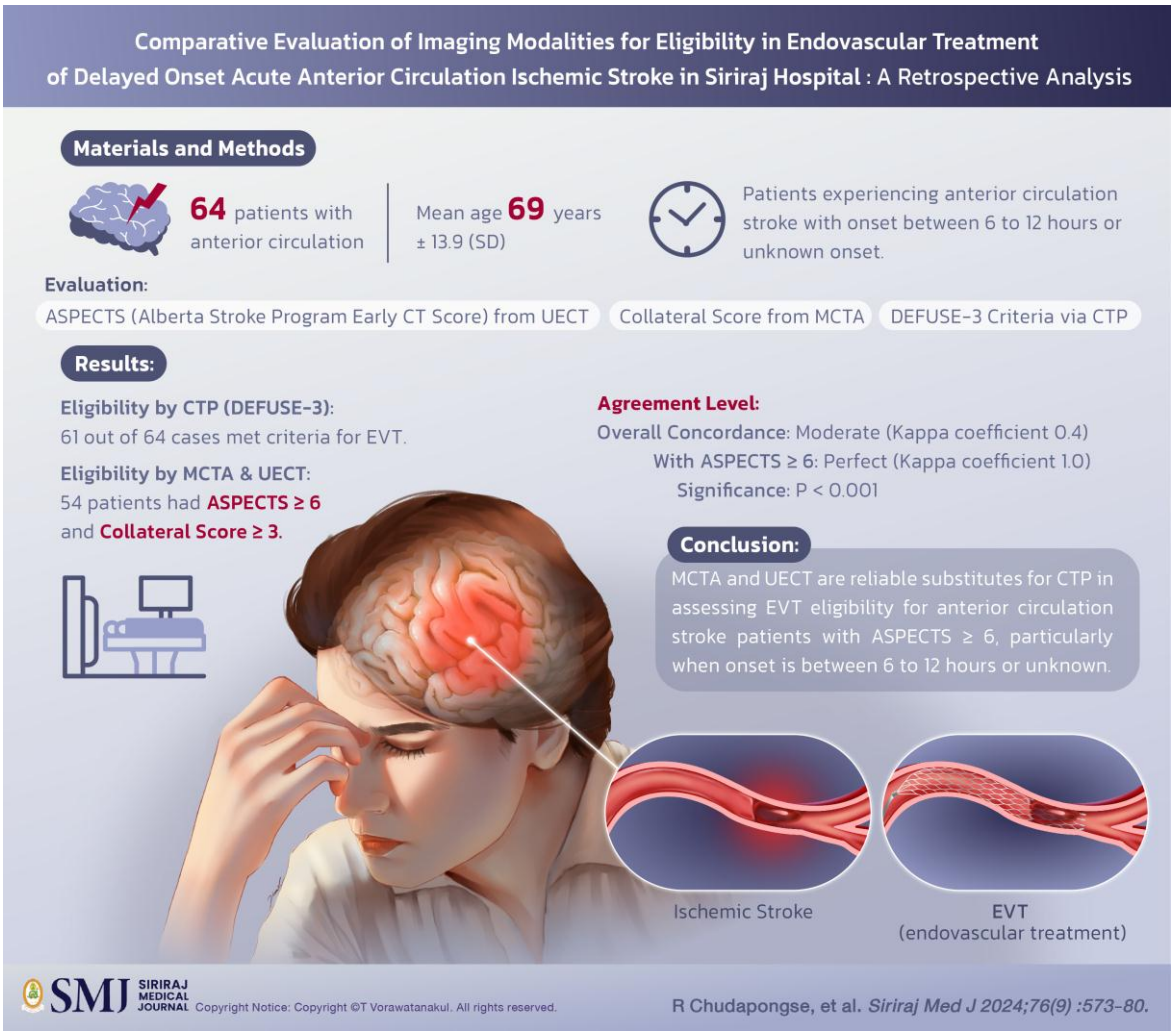


Treatment predominantly involved antiplatelet therapy and supportive care. Only 10 patients received thrombolytic therapy, limited by delayed presentation and resource constraints. The average hospital stay was 12 days. At discharge, 35% of patients had moderate to severe disability (mRS 3-5), and in-hospital mortality was 12%.

Discussion

This study highlights the significant burden of ischemic stroke in the Samarkand region, with a typical patient profile of elderly individuals with multiple vascular risk factors. The predominance of hypertension and diabetes aligns with global stroke epidemiology but underscores the need for enhanced primary prevention in this population.

Delayed hospital presentation remains a critical challenge, limiting eligibility for acute interventions such as thrombolysis and endovascular therapy. Public awareness campaigns on stroke recognition and urgency are essential to reduce pre-hospital delays. Additionally, the limited availability of advanced neuroimaging restricts accurate diagnosis and tailored treatment, necessitating investment in healthcare infrastructure.



The disability and mortality rates observed reflect the need for improved acute stroke care and comprehensive rehabilitation services to enhance functional recovery and quality of life post-stroke.

Conclusion

Ischemic stroke in the Samarkand region presents with typical clinical and demographic patterns but is complicated by significant delays in diagnosis and treatment, leading to high morbidity and mortality. Addressing these issues requires a multifaceted approach including public

education, training of healthcare providers, improved emergency response systems, and investment in diagnostic and therapeutic technologies. The findings of this retrospective study highlight that ischemic stroke patients in the Samarkand region predominantly present with well-established vascular risk factors such as hypertension and diabetes mellitus. Most patients experience significant delays in seeking hospital care, which considerably limits the utilization of acute stroke treatments like thrombolysis, thereby contributing to poor functional outcomes and increased mortality.

Motor deficits and speech impairments remain the most common clinical manifestations, reflecting the typical stroke presentations seen globally. However, infrastructural limitations, including restricted availability of advanced neuroimaging and stroke-specific therapies, present significant barriers to optimal stroke care in the region.

Addressing these challenges requires a multifaceted approach: enhancing public education to improve stroke symptom recognition and prompt hospital arrival; training healthcare providers in early stroke management protocols; and investing in diagnostic and treatment infrastructure, including thrombolysis and rehabilitation services.

Ultimately, strengthening the entire stroke care pathway—from prevention and early recognition to acute treatment and post-stroke rehabilitation—will be critical in reducing the burden of ischemic stroke in Samarkand. Future prospective studies are warranted to evaluate the effectiveness of implemented interventions and to continue advancing stroke care in Uzbekistan.

By strengthening stroke care pathways and expanding access to timely interventions, the healthcare system in Samarkand can improve outcomes for stroke patients and reduce the overall disease burden. Future research should focus on prospective studies to evaluate the impact of targeted stroke programs and rehabilitation services in this region.

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