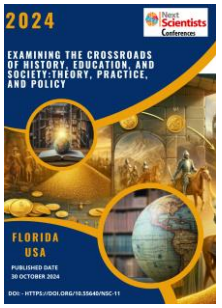

PREVENTING ADVERSE OUTCOMES OF ISCHEMIC STROKE IN PATIENTS WITH TYPE II DIABETES MELLITUS: A COMPARATIVE STUDY

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ABSTRACT
Ischemic stroke in the setting of Type II Diabetes Mellitus presents several unique challenges, reflected in increased complication rates and poorer long-term outcomes. This review will attempt to point out possible strategies for avoiding adverse outcomes in patients with ischemic stroke and concomitant DM-2. 256 patients with IS were investigated: MG consisted of 124 patients who presented with IS and DM-2, and CG included 132 patients with IS who did not have DM-2. According to the results obtained, it can be concluded that proper blood glucose control, early thrombolysis, and rehabilitation measures adapted to the individual features of a patient may weaken the noxious effects of ischemic stroke in patients with DM-2. Besides, addressing underlying cardiovascular risk factors and optimizing pharmacological therapy are both vital in the improvement of clinical outcomes in this high-risk population.

KEYWORDS: Ischemic stroke, Type II diabetes mellitus, glycemic control, thrombolysis, rehabilitation, cardiovascular risk factors, outcomes, stroke management.

INTRODUCTION
Ischemic stroke presently stands out as one of the main causes of morbidity and mortality in the world. The pathophysiology of ischemic stroke is essentially Obstruction to cerebral blood flow leading to neuronal insult and neurological deficits. In patients with Type II Diabetes Mellitus, the risk of ischemic stroke is substantially increased by the presence of vascular comorbidities such as atherosclerosis and endothelial dysfunction. Additionally, DM-2 worsens post-stroke complications, including worse functional outcomes and higher rates of disability.
The aim of this research paper is to compare the clinical outcomes of ischemic stroke in patients with and without Type II diabetes mellitus, and based on the findings, explore possible strategies for prevention of adverse outcomes in the former group of patients. This review therefore intends to identify the most effective approaches in managing these patients both in the acute and recovery phases of ischemic stroke [1].

MATERIALS AND METHODS
In this retrospective observational study, 256 patients were diagnosed with ischemic stroke and treated in a hospital environment. The cohort consisted of two groups. Main Group (MG): 124 patients, who constituted 48.4% of the overall cohort with ischemic stroke and concomitant Type II Diabetes Mellitus. This group included 67 women (54.0%) and 57 men

(46.0%) aged 51 to 79 years. These patients were assessed during the acute and subacute periods of ischemic stroke.

CG, Comparison Group: 132 patients, 51.6% of the total cohort, who presented with ischemic stroke and without concomitant Type II Diabetes Mellitus, in whom there were 67 women (47.0%) and 70 men (53.0%), aged 54 to 76 years, also assessed in the acute and subacute periods of ischemic stroke.

The two groups were then subjected to extensive clinical investigations like neurological examination, neuroimaging studies, blood investigations, and monitoring of the blood glucose level. Assessment of stroke severity was made by the National Institutes of Health Stroke Scale and functional outcome by the modified Rankin Scale. The management protocol for patients with DM-2 included strict glycemic control, antithrombotic therapy, and blood pressure management. In addition, patients were assessed for possible cardiovascular risk factors, and personalized rehabilitation programs were implemented [2].

RESULTS

The study showed some significant differences in the clinical outcomes between the two groups, with patients in the MG showing worse initial neurological deficits and longer recoveries. The mean NIHSS score at admission was higher for patients with DM-2, indicating more extensive cerebral ischemia compared to that in the CG. DM-2 presence was associated with worse functional recovery, as shown by a greater proportion of the patients in the MG being categorized as having moderate to severe disability on the mRS scale [3,4].

There was, however, a significant improvement in the outcomes of early intervention and management strategies in both groups. In the MG, patients who underwent aggressive blood glucose control and received thrombolytic therapy within the time frame as recommended demonstrated better functional outcomes compared to those treated with standard management. Patients with DM-2 who followed a structured rehabilitation program, on the other hand, demonstrated an improved motor and cognitive recovery compared to those who did not follow [5].

It was found through statistical analysis that good blood glucose regulation within the first 24 hours after stroke, combined with early rehabilitation, significantly reduced the incidence of post-stroke complications such as infection, depression, and poor functional outcomes in MG.

Category	Main Group (MG)	Comparison Group (CG)
Total Participants	124 (48.4%)	132 (51.6%)
Gender	67 women (54.0%), 57 men (46.0%)	67 women (47.0%), 70 men (53.0%)
Age Range	51–79 years	54–76 years
Type of Patients	Ischemic Stroke (IS) with Type II Diabetes Mellitus (DM-2)	Ischemic Stroke (IS) without Type II Diabetes Mellitus
Acute and Subacute Periods	Yes	Yes
Mean NIHSS Score at Admission	Higher (more severe deficits)	Lower (less severe deficits)

Blood Glucose Control	Aggressive glucose control	Standard glucose control
Thrombolytic Therapy	Applied within the therapeutic window (within 4.5 hours)	Applied within the therapeutic window (within 4.5 hours)
Rehabilitation Program	Structured, personalized program	Standard rehabilitation
Key Comorbidities	Hypertension, dyslipidemia, obesity, atherosclerosis	Hypertension, dyslipidemia, obesity, atherosclerosis
Functional Recovery (mRS Score)	Higher incidence of moderate to severe disability	Lower incidence of moderate to severe disability
Post-Stroke Complications	Higher rates of infections, depression, poor recovery	Lower rates of infections, depression, better recovery
Key Findings	Worse initial neurological deficits, longer recovery times, but better outcomes with glycemic control and rehabilitation	Better functional recovery, less severe deficits, but no specific impact from glucose control or rehabilitation
Recommendations	Strict glycemic control, early thrombolysis, tailored rehabilitation	Standard management, but benefits from early intervention still present

This table clearly juxtaposes the patient groups, emphasizing major differences in management strategies, outcomes, and suggestions for future care regarding ischemic stroke patients with Type II Diabetes Mellitus.

DISCUSSION

Well-established is the increased risk of ischemic stroke in patients with Type II Diabetes Mellitus, and the present study confirms that DM-2 contributes to poor clinical outcome after ischemic stroke. Several possible factors are linked to this increased risk: vascular function impairment, endothelial dysfunction, and chronic hyperglycemia increase ischemic damage. Besides, comorbid conditions such as hypertension and dyslipidemia complicating DM-2 further add to the poor prognosis after stroke [6].

A multidisciplinary approach is required for the avoidance of adverse outcomes in patients with DM-2. There is a great need for early control of blood glucose because hyperglycemia has been associated with increased infarct size and worse neurological outcomes. Thrombolytic therapy, when applied within the therapeutic window, significantly improves reperfusion especially in patients with DM-2. Thirdly, personalized rehabilitation programs tailored to the specific needs of DM-2 patients may reduce long-term disability and improve quality of life [7].

The study also emphasizes the importance of addressing cardiovascular risk factors in diabetic patients. Strategies such as antihypertensive therapy, statins for dyslipidemia, and antiplatelet agents may help reduce the incidence of recurrent stroke and other cardiovascular events, thereby improving long-term survival rates and functional outcomes.

CONCLUSION

In conclusion, ischemic stroke patients with concomitant Type II Diabetes Mellitus carry a higher risk for adverse outcomes. However, appropriate management, including strict glycemic control, timely thrombolysis, and comprehensive rehabilitation, can mitigate these outcomes. Further studies are needed to refine these strategies and explore new therapeutic approaches, especially focusing on individualized care for patients with comorbid diabetes and stroke.

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