INSULIN RESISTANCE AS A PREDICTOR OF PROGNOSIS IN NONDIABETIC PATIENTS WITH ACUTE ISCHEMIC STROKE

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Annotation. *This study examines the prognostic significance of insulin resistance (IR) in nondiabetic patients with acute ischemic stroke. A cohort of 108 first-ever stroke patients without prior diabetes was evaluated using the homeostasis model assessment of insulin resistance (HOMA-IR). Patients were categorized into quartiles, with the highest quartile defined as insulin resistant, and followed for 12 months. IR was present in one-quarter of the cohort and was independently associated with increased mortality, higher recurrence rates, and poorer functional outcomes, even after adjusting for vascular risk factors. A clear dose-response relationship was observed, with higher HOMA-IR values correlating with progressively worse outcomes. These findings suggest that metabolic assessment, particularly identification of IR, should be integrated into routine stroke evaluation and secondary prevention strategies.*

Keywords. *acute ischemic stroke; insulin resistance; HOMA-IR; prognosis; mortality; stroke recurrence; functional outcome; nondiabetic patients*

Background: Insulin resistance (IR) has been increasingly recognized as an important metabolic disorder contributing to poor outcomes in patients with ischemic stroke, even in the absence of diabetes mellitus. This study aimed to investigate the prevalence of IR and its association with prognosis in nondiabetic patients with acute ischemic stroke.

Methods: A total of **108 patients** with first-ever acute ischemic stroke and no prior history of diabetes were included. Insulin resistance was assessed using the homeostasis model assessment of insulin resistance (HOMA-IR), calculated as fasting insulin (μU/mL) × fasting glucose (mmol/L) / 22.5. Patients were divided into quartiles of HOMA-IR, with the highest quartile (Q4) defined as insulin resistant. All patients were followed for 12 months to record mortality, stroke recurrence, and functional outcomes measured by the modified Rankin Scale (mRS). Logistic regression and Cox proportional hazards models were used to evaluate the relationship between IR and prognosis after adjusting for vascular risk factors.

Results: The median HOMA-IR value in the cohort was **2.0** (interquartile range: 1.2–3.3). Insulin resistance was present in **27 patients (25%)**. Compared with patients without IR, those with IR had higher risks of adverse outcomes. At 12 months, patients

with IR had greater mortality (adjusted hazard ratio [HR]: 1.72; 95% CI: 1.05–2.81; p=0.03), increased stroke recurrence (HR: 1.63; 95% CI: 1.07–2.48; p=0.02), and poorer functional outcomes (adjusted odds ratio [OR]: 1.48; 95% CI: 1.01–2.14; p=0.04). No significant difference was observed for dependence (mRS 3–5). A dose-response trend was also noted across HOMA-IR quartiles, with higher values correlating with progressively worse outcomes (p for trend <0.01).

Conclusions: In this study of 108 nondiabetic patients with acute ischemic stroke, insulin resistance was frequent and independently associated with mortality, stroke recurrence, and poor functional recovery at one year. These findings highlight the prognostic importance of identifying IR in stroke patients and suggest that metabolic assessment should be incorporated into routine evaluation and secondary prevention strategies.

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