

# A short note on existence of insulin resistance in migraine

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## Introduction

Migraine is a chronic neurovascular disease characterized by recurrent headache attacks with neurological and autonomic symptoms. Epidemiological studies have shown a strong link between migraine and vascular diseases such as hypertension and stroke.<sup>1</sup> In women of childbearing potential, migraine significantly increases the risk of ischemic stroke, independent of other vascular risk factors. The putative neurobiological mechanisms underlying this comorbidity are unknown. Impaired insulin sensitivity has emerged as a risk factor for hypertension and stroke. Insulin resistance is a condition in which normal amounts of insulin produce abnormal physiological responses. The hyperinsulinemia euglycemic glucose clamp is considered the most definitive method to measure insulin sensitivity in humans, but it is experimentally difficult and expensive.

## Description

During the OGTT, plasma glucose concentrations were significantly higher in nonobese, nondiabetic, and normotensive migraine patients than controls. Fasting-based measures of insulin sensitivity were not significantly different between patients and controls. However, indices of insulin sensitivity, including OGTT and all data derived from his BMI scores such as ISI-stupid and OGIS-180, were indicative of the insulin resistant status of the migraine patient.<sup>3</sup> Although no significant difference was found between migraine with and without aura, it is possible that too few patients were studied in the subgroups to obtain a statistically significant difference. Insulin resistance is associated with many diseases, including type 2 diabetes, hypertension, obesity, dyslipidemia, coronary artery disease, and stroke. Our data suggest that insulin resistance also exists in migraine.

Plasma glucose concentrations in migraine patients were significantly higher than in controls during the OGTT. Insulin sensitivity, as measured by the ISI-Stumvoll and OGIS-180 indices, was significantly altered in migraine. Migraine sufferers often report that fasting, a state in which insulin recep-

tors are activated triggers headache attacks. A low-sugar diet can reduce the frequency of migraine attacks. In migraine patients, the incidence of diabetes significantly increases the average number of headache days per year.<sup>4</sup> Finally, a recent study showed a significant association between polymorphisms in the insulin receptor (INSR) gene and migraine, suggesting a possible role of the insulin receptor in migraine pathogenesis.

## Conclusion

Adverse biological events associated with insulin resistance include abnormal fibrinolysis, hyperglycemia, hyperinsulinemia, systemic inflammation, hypertension, alterations in vascular endothelial function, and atherogenesis. Insulin resistance is also associated with increased platelet aggregation and elevated serum von willebrand factor. Some of these abnormalities have been reported in migraine patients and may be associated with the increased risk of high blood pressure and stroke associated with this condition. Strategies that improve insulin sensitivity are beneficial in migraine. Aerobic exercise reduces insulin resistance and thus may reduce vascular complications in migraine patients. Effective insulin sensitizers have recently become available on the market, and these drugs may be used to prevent migraines. Additional research is needed to elucidate the role of insulin resistance in migraine pathogenesis and to evaluate new disease prevention strategies.

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## Conflict of interest

The author has nothing to disclose and also state no conflict of interest in the submission of this manuscript.

## References

1. Kokavec A. Effect of sucrose consumption on serum insulin, serum cortisol and insulin sensitivity in migraine: evidence of sex differences. *Physiol Behav*; 2015;142:170-8.
2. Guest PC. Insulin resistance in schizophrenia. *Adv Exp Med Biol*; 2019: 1134:1-16.
3. Scheen AJ. Glucose-lowering agents and risk of ventricular arrhythmias and sudden cardiac death: a comprehensive review ranging from sulphonylureas to SGLT2 inhibitors. *Diabetes Metab*; 2022;2:101405.
4. Rozance PJ. Hypoglycemia in the newborn and neurodevelopmental outcomes in childhood. *JAMA*; 2022;327:12:1135-1137.

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