Diabetics treated with insulin, sulfonylureas or other insulin secretagogues are at high risk of hypoglycemia

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Introduction

The risk of hypoglycemia in patients with Type 1 Diabetes (T1D) is clearly recognized as a side effect of treatment. Less clearly understood in her patients with Type-2 Diabetes (T2D) who are treated with insulin. The risk of hypoglycemia in people with type-2 diabetes is considered minor and as a result is often negligible. Recent evidence contradicts this assumption and suggests that the severe consequences of hypoglycemia may be exacerbated in several ways in patients with type-2 diabetes, especially with respect to its cardiovascular effects. Moreover, in older people with T2D who often live alone, comorbidities make hypoglycemia much more dangerous and may become difficult to manage. Hypoglycemia is rare in people who do not have diabetes because endogenous insulin secretion is inhibited when blood glucose levels are below normal.

Description

Diabetics treated with insulin, sulfonylureas, or other insulin secretagogues are at increased risk of hypoglycemia as blood glucose levels continue to fall until the effects of insulin boluses or oral medications are resolved. Once diagnosed, diabetics are at least partially protected from the hypoglycemic effects of insulin by physiological responses induced by stress pathways. Glucagon is a potent counter-regulatory hormone that protects humans against hypoglycemia by stimulating the release of glucose from the liver *via* glycogenolysis. With increasing duration of diabetes, in both T1D and advanced her T2D, progressive cell loss prevents paracrine crosstalk between cells and causes impaired glucagon release during hypoglycemia. This increases susceptibility to hypoglycemia. Therefore, duration of T1D and, in T2D, duration of insulin treatment is important predictors of hypoglycemia risk.

A detailed description of the consequences of hypoglycemic episodes is beyond the scope of this review, but recent studies have shown that in addition to hypoglycemia's well-known effects on the central nervous system, hypoglycemia has cardiovascular effects. Adverse outcomes are becoming more likely. Extensive evidence, including clinical trials and observational studies, shows a consistent association between hypoglycemia and adverse cardiovascular outcomes. Current debate focuses on whether hypoglycemia is a causal risk factor or simply a marker of risk, with hypoglycemia being more common in individuals at risk due to frailty or comorbidities. In the absence of randomized controlled trials that are neither feasible nor ethical, it is difficult to prove either method, but many believe that both mechanisms are attributing. However, the strength and consistency of this association underscores the importance of choosing treatments that minimize the risk of hypoglycemia, especially in susceptible individuals. It's easy to do with an easy-to-use mobile device. Some people with T2D test frequently and others never. The number and timing of prescribed glucose tests per day should be individualized to the needs of the diabetic.

Conclusion

However, payers often limit glucose monitor models and/or strip allowances, often changing coverage every year. Finally, out-of-pocket costs and sore fingertips also limit testing. The literature is inconsistent about the recommended number of blood glucose tests per day for a type-2 diabetic if she is taking insulin. Prevention of hypoglycemia remains problematic, as evidenced by the high rates observed in various studies. A first step in prevention is recognizing the risk of hypoglycemia in her T2D population receiving insulin therapy. Second, avoiding excessive glucose excursions is an important consideration for reducing the risk of hypoglycemia in T2D. Treatments with low risk of glycemic excursions should be considered.

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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.

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