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Cystic Fibrosis Research News

Title:

DYSREGULATED INSULIN SECRETION IN PANCREATIC INSUFFICIENT CYSTIC FIBROSIS WITH POST-PRANDIAL HYPOGLYCEMIA

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What was your research question?

We wanted to test whether people with cystic fibrosis who have high blood sugar soon after a meal were more likely to go on to have a low blood sugar (hypoglycemia) in the hours following a meal. We also hoped to test whether the high blood sugar was related to reduced insulin secretion immediately after the meal but a later overcompensation with increased insulin secretion causing the low blood sugar.

Why is this important?

It is not uncommon for individuals with cystic fibrosis to experience low blood sugar in response to oral glucose tolerance testing or after meals. The reason for this is not understood, but we suspected that this issue arises because insulin secretion is delayed which results in an inappropriately excessive insulin secretion. This insulin secretion pattern may be an early sign that someone might develop CF-related diabetes (CFRD).

What did you do?

We asked young adults with CF and pancreatic insufficiency, but without diabetes, to eat a meal. We sampled their blood at frequent time points before and after and measured sugar, insulin, and other

hormones. We grouped individuals who did and did not have low blood sugars and compared the early sugar levels as well as their insulin secretion rates.

What did you find?

We found that roughly 25% of individuals had low blood sugars in the four hours following the meal, most commonly at about two and a half hours. These individuals had very high blood sugars right after the meal, lower insulin secretion right after the meal and then seemed to have inappropriately high insulin levels at two to three hours.

What does this mean and reasons for caution?

Low blood sugars can be disruptive to daily living and dangerous if not acted upon. We recommend that patients eat after oral glucose tolerance testing to prevent these low blood sugars. At office visits, we recommend that patients discuss possible symptoms of low blood sugars occurring in their daily lives with their providers. It is possible that dietary modification including limiting meals with candy, cakes and sweet drinks will benefit patients.

What's next?

We are currently recruiting patients for a study involving an oral glucose tolerance test that occurs over four hours instead of the traditional two. We hope that this will further clarify the findings of our current study. Additionally, studies are needed to understand whether patients with low blood sugars are at risk of developing CFRD in the future and whether dietary modification can prevent these low blood sugars.

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