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Cystic Fibrosis Research News

Title:

Continuous glucose monitoring indices predict poor FEV_1 recovery following cystic fibrosis pulmonary exacerbations.

Lay Title:

Elevated blood glucose during exacerbations of cystic fibrosis lung disease is associated with poor recovery of lung function.

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What was your research question?

Cystic fibrosis related diabetes (CFRD) is associated with worsening respiratory health including more frequent respiratory exacerbations (chest infections) and more rapid decline in lung function. However, little is known about how high blood glucose during respiratory exacerbations affects recovery of lung function.

Why is this important?

Up to 25% of cystic fibrosis (CF) patients experiencing a respiratory exacerbation fail to recover their baseline lung function following appropriate intravenous antibiotic therapy, which may contribute to lung function decline over time. Identifying modifiable factors that are linked with poor lung function recovery and optimising their management is therefore of critical importance.

What did you do?

We used a continuous glucose monitoring system (CGMS) to measure blood glucose from the beginning of a hospital admission for a respiratory exacerbation. CF patients with and without

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CFRD were included in the study. The CGMS, which provides an estimate of blood glucose every 15 minutes using a sensor attached to the skin, was continued for a total of 6 weeks so that we could observe changes in blood glucose as patients recovered from their illness after hospital discharge. We used the data collected from the CGMS to evaluate the effect of blood glucose on lung function improvement following treatment with intravenous antibiotics.

What did you find?

We found that blood glucose was higher during the first week of hospital admission and gradually returned to baseline levels by week 4. We observed that patients with higher blood glucose had smaller improvements in lung function than those with normal blood glucose. Furthermore, we found that having a diagnosis of CFRD did not have an influence on lung function improvement as long as blood glucose were close to normal (well controlled CFRD).

What does this mean and reasons for caution?

The implication from these findings is that optimization of blood glucose in CFRD patients during respiratory exacerbations may help maximise lung function improvement following treatment, although this theory requires further study. These results need to be interpreted with caution as the design of the study does not allow us to definitively establish high blood glucose as a direct cause of poor lung function recovery. For example, it is possible that patients with higher blood glucose levels may have been sicker than those with normal levels which could also explain poor lung function recovery.

What's next?

It is important to follow these findings with larger clinical studies that will evaluate the effect of optimizing blood glucose during respiratory exacerbation on lung function recovery. Such studies may also help confirm that high blood glucose directly affects lung function recovery.

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https://pubmed.ncbi.nlm.nih.gov/33781701/