Cystic Fibrosis Research News

Title:

POSTPRANDIAL CHANGES IN GASTROINTESTINAL FUNCTION AND TRANSIT IN CYSTIC FIBROSIS ASSESSED BY MAGNETIC RESONANCE IMAGING

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What was your research question?

We wanted to understand whether there were any differences in how the gut works in people with cystic fibrosis (CF) compared to people who do not have CF by using magnetic resonance imaging (MRI), a way to generate images of the inside of the body.

Why is this important?

The CF community across the world (including those with the disease, their families and health care professionals) ranked the question “how can we relieve gut symptoms such as stomach pain, bloating and nausea?” as a top research priority. However, the way the gut works in CF is not well understood and the tools currently used to understand gut problems are not patient friendly. MRI is safe and there is no need to have special drinks beforehand, unlike for other types of scans or camera tests. MRI has not been used previously to understand gut problems in CF.

What did you do?

We invited people with CF with the commonest gene mutation (F508del/F508del) and people without CF, aged between 12 and 40 years old, to take part in a 1-day scan day at the

University of Nottingham. On the day of scanning, participants were provided with breakfast and lunch. Each person had multiple MRI scans and completed questionnaires throughout the day. We used MRI to measure: the length of time taken for food to move from the stomach to the colon (transit time); colon volumes; amount of water in the small bowel. A questionnaire was used for assessing gut symptoms.

Figure 1. Participant in MRI scanning room. Photo taken with permission.

What did you find?

People with CF had gut transit times that were on average 2 hours longer than in people without CF. We also found that the colon volumes and the amount of water in the small bowel were higher in people with CF when we adjusted the values for height and weight. The change in the amount of water in the small bowel after people with CF ate their lunch was much less than people without CF. There were no differences in the gut symptoms.

What does this mean and reasons for caution?

We have shown that it is possible to see differences in how the gut works in CF, using MRI. Whilst it has previously been thought that gut problems in CF are due to thick and sticky gut fluids, our results show there could be multiple reasons for these gut problems. A slower transit time with a reduced change in the amount of small bowel water could be due to a

blockage at the junction of the small and large bowel. This area is known for causing the most severe CF gut complication: distal intestinal obstruction syndrome (DIOS).

What's next?

MRI could be used to compare individuals with CF who experience gut symptoms and complications with those who have few gut symptoms, to help us understand the variation of CF gut problems. MRI could also be used to understand the effects of new CF treatments on the gut.

Original manuscript citations in PubMed

https://pubmed.ncbi.nlm.nih.gov/32561324/