



Cystic Fibrosis Research News

Title:

Ivacaftor-elexacaftor-tezacaftor and tacrolimus combination in cystic fibrosis.

Lay Title:

New drug for cystic fibrosis does not significantly interfere with another drug that prevents organ rejection

Authors:

Megan Smith¹, Kevin J. Ryan⁶, Hector Gutierrez^{2,3}, Luz Helena Gutierrez Sanchez⁴, Janaina Nogueira Anderson⁵, Edward P. Acosta^{2,6}, Kim W. Benner¹, Jennifer S. Guimbellot^{2,3*}

Affiliations:

1 McWhorter School of Pharmacy, Samford University, Birmingham, AL

2 Gregory Fleming James Cystic Fibrosis Research Center, University of Alabama at Birmingham (UAB), Birmingham, AL

3 Department of Pediatrics, Division of Pulmonary and Sleep Medicine, UAB, Birmingham, AL

4 Department of Pediatrics, Division of Gastroenterology, Hepatology and Nutrition, UAB, Birmingham, AL

5 Department of Pediatrics, Division of Pediatric Gastroenterology, Hepatology and Nutrition, Medical University of South Carolina, Charleston, SC

6 Department of Pharmacology and Toxicology, UAB, Birmingham, AL

What was your research question?

Our research question was “does a new drug for cystic fibrosis (CF) interfere with a drug that is commonly used in such patients who also have had a liver transplant?”. We wanted to know how the drug combination reacted in the one patient we studied.

Why is this important?

Ivacaftor-elexacaftor-tezacaftor (or ETI) is in a new class of CF drugs so there is little information on the safety of using these drugs in combinations with others. Sometimes these drug combinations can lead to unacceptable side effects in patients and rarely, death. CF patients who have had an organ transplant often must take drugs to prevent their immune system from rejecting the organ. These new CF related drugs like ETI are life changing and thus, they need to be able to be used safely in patients who have had an organ transplant.

Cystic Fibrosis Research News

cfresearchnews@gmail.com

Cystic Fibrosis Research News

What did you do?

We looked back at the records from one patient to see when she got her liver transplant, when she started taking the drug to prevent rejection of the liver (tacrolimus) and when she started taking the new drug (ETI) that specifically treats CF. We noted any elevations in her blood levels that would suggest side effects as well as concentrations of the tacrolimus and ETI. We then plotted the drug levels over time to see what effect the two drugs taken together had on each other.

What did you find?

In this report we found that our patient who had a liver transplant did have a worsening of her CF lung function that improved significantly with the addition of ETI. There was no major change in her drug levels of either ETI or tacrolimus when they were used together. This patient did have changing liver function levels which might suggest liver injury or rejection of the new liver.

What does this mean and reasons for caution?

This case report shows that in this one patient, the combination of ETI and tacrolimus did not alter the drug level of either medication. However, this is only in one patient and results in other CF patients may differ based on the type of organ transplant and other combinations of medicines to be used. Additionally, we do not know if this patients' liver elevations are due to rejection or the ETI. Therefore, close monitoring should be used with any patient taking both tacrolimus and a drug like ETI.

What's next?

For this patient, a liver biopsy would help reveal if the liver injury was due to the drug combination or worsening disease. More research is needed on the class of drugs ETI is in when used in combination with other important medications, such as those used in organ transplant patients.

Original manuscript citation in PubMed

<https://pubmed.ncbi.nlm.nih.gov/34130909/>