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Cystic Fibrosis Research News

Title:

Long term clinical effectiveness of ivacaftor in people with the G551D CFTR mutation

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What was your research question?

What are the benefits of ivacaftor on various clinical outcomes (lung function, growth, quality of life, and sweat chloride) in people with cystic fibrosis (CF) taking ivacaftor, a CFTR modulator medication, for over 5 years?

Why is this important?

Ivacaftor was the first CFTR modulator approved for people with CF who have at least one G551D mutation. Studies relying upon national databases (registries) have begun to report on the long-term beneficial effects of ivacaftor. The prospective design of our study is that we checked in with study participants at regular intervals over 5 years. This way, the study adds to findings from previous studies and includes outcomes not included in registries.

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What did you do?

We conducted an observational study at multiple centers in the United States (U.S.) and included children and adults with CF with at least one copy of the G551D mutation. Measures of lung function, growth, quality of life, and sweat chloride were taken before and up through 5 years after starting ivacaftor. We also included data from the U.S. CF Foundation Patient Registry, to get additional information on pulmonary exacerbations, respiratory culture results, and chronic medication use.

What did you find?

The study cohort of 96 participants experienced improvements in lung function, that became less apparent by the end of the study period. Adults had larger improvements in lung function than children and rates of lung function decline over time were lower in the adult group compared with the children. Significant improvements in growth, quality of life, sweat chloride, presence of *Pseudomonas aeruginosa*, and frequency of pulmonary exacerbations were also seen in this study cohort. Decreases in sweat chloride continued over 5 years, and were associated with improvement in lung function in the adults.

What does this mean and reasons for caution?

These findings clearly show long-term benefits of ivacaftor in people with CF and support its ongoing use. However, lung function decline continued, albeit at a slower rate, and additional strategies are needed to stop lung function decline, particularly in children. In addition, we saw an increase in the percentage of study participants in overweight and obese weight categories. This finding may require a reduction in calorie intake and other weight-loss strategies in some people while on long-term ivacaftor treatment.

What's next?

The triple combination CFTR modulator therapy, as well as novel treatments, will be needed to further improve outcomes in people with CF in the future.

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