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Cystic Fibrosis Research News

Title:

Modelling Cystic Fibrosis Disease Progression in Patients with the Rare CFTR Mutation P67L

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What was your research question?

The aim of our study was to investigate the progression of cystic fibrosis (CF) in people with the rare mutation P67L to determine if individuals with this mutation experience a milder form of CF compared to those who have the common severe presentation of the disease.

Why is this important?

Studying disease progression for people with rare CF mutations is important for several reasons. It is a key step in understanding the nature of the mutation for further development of specific therapy that would directly target that particular mutation. By analyzing how progression in symptoms of CF may vary from typical course of the disease, we can infer what having that mutation means for individuals. Moreover, compiling data over time from a group of individuals with the same rare mutation is very valuable information for health care teams who will care for a few of these individuals.

What did you do?

We analyzed patient's data recorded in the Cystic Fibrosis Canada Patient Registry to assess how lung function, Body Mass Index (BMI), bacterial infection, and hospital admissions changed as those with the rare P67L mutation aged. We compared these results to individuals with the common F508del mutation which is well known to cause severe CF. Additionally, we looked at age when diagnosed, pancreas health and CF related diabetes. The P67L group was comprised of 26 Canadians with CF. 266 Canadian individuals with the F508del mutation served as the comparison group for severe CF.

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What did you find?

Our study shows that individuals with the P67L mutation have a mild CF disease at time of diagnosis with a slow progression. Their pancreas is mostly unaffected by the disease and they maintain a good body weight as they age. A substantial delay in the onset of life-threating bacterial lung infection was noted. Also, P67L individuals spent significantly fewer days in hospital and a greater proportion of them live to an older age. Decline in their lung function however was similar to the comparison group (severe CF), possibly due to lung damage that occurred before CF was diagnosed.

What does this mean and reasons for caution?

The presence of the P67L mutation produces a milder form of CF. Despite a late diagnosis, mild gastrointestinal symptoms and a different bacterial infection profile may compensate for declining lung health and account for long-term survival. CF is a rare disease and the number of CF individuals with a rare mutation is very small which makes statistical analysis difficult. Also, some factors were not recorded in the registry. Variations in disease progression and variability between individuals are important to consider. Nevertheless, this study is unique and provides valuable tools for research and clinical care.

What's next?

With newborn screening now in place, it will be interesting to repeat the study to assess the impact of early treatment (intervention) on the course of the disease, especially for the lung. Investigating other rare mutations will provide information about the diversity in CF presentations to clinicians, individuals with CF, and families.

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