Cystic Fibrosis Research News

Title:
The impact of liver disease on mortality in cystic fibrosis – a systematic review

Lay Title:
Cystic fibrosis liver disease – A clinical challenge in the era of improved outcomes.

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What was your research question?
Rare complications in CF such as CF liver disease (CFLD) are believed to be associated with worse outcomes but the data is not clear. We reviewed the literature to see if people with CF (pwCF) with liver disease may have a shorter life expectancy than pwCF without liver disease.

Why is this important?
Understanding the impact of rarer complications such as CFLD on survival is essential if further improvement in outcomes for pwCF is to be achieved. While less than 10% of pwCF will develop advanced liver disease, it is important to determine if those with CFLD have benefited from improvements in CF care and if not, to understand the reasons why not.

What did you do?
To ensure a comprehensive and transparent review we followed the guidelines for performing systematic reviews. The review was registered in Prospero (CRD42020182885). Prospero is an international database of systematic reviews which ensures there is no duplication or waste of scarce research resources. In compliance with Prospero a peer reviewed protocol describing the research strategy, with inclusion and exclusion criteria was published at https://hrbopenresearch.org/articles/3-44/v3

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CFLD is poorly defined in the literature, so we divided studies into 2 sets based on the definition of liver disease used in the study.

What did you find?

Fourteen studies met the inclusion criteria. Of these 8/14 reported outcomes for CFLD but did not make comparisons to pwCF with no liver disease. The other six studies directly compared survival between those with CFLD and those with no liver disease. Five of these six studies reported that participants with CFLD had at least 3 times the risk of death when compared to pwCF with no liver disease. The sixth study may not have found differences in outcome because children were under 1 year of age at beginning of participation and the length of follow-up may have been too short for the participants to develop CFLD.
It was also found that rather than liver failure, complications of lung disease were still the main cause of death in pwCF with CFLD.

What does this mean and reasons for caution?

Research in rare diseases, such as CF, is challenging and outcome studies spanning the transition from paediatric to adult care are difficult to perform. The lack of diagnostic tests or agreed definitions hamper research. Given the inherent difficulties in performing good quality research in any rare disease, it noteworthy that different study designs, definitions, or different CF populations all point to reduced life expectancy in those with CFLD. Disappointingly the impact of CFLD has not improved over time. Also, a recent study demonstrated early diagnosis and improved care has not improved outcomes for those with CFLD.
The impact of CFLD may not be appreciated due to the complex nature of multidisciplinary care, and because lung complications rather than liver failure are the main cause of death.

What's next?

Improvements in life expectancy experienced by pwCF must extend to those with CFLD. Better diagnostic tests or clinical criteria which can be implemented by researchers and CF registries alike are needed. Our work highlights that greater international collaboration must be achieved, to ensure that robust research data on CFLD is generated and able to answer research questions on how to improve outcomes for this rare complication of CF.

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