Cystic Fibrosis Research News

Title:

REGIONAL DIFFERENCES IN INFECTION AND STRUCTURAL LUNG DISEASE IN INFANTS AND YOUNG CHILDREN WITH CYSTIC FIBROSIS

Authors:

Rosemary Carzino[1], Katherine B. Frayman[1,2,4,5,6], Louise King[1], Suzanna Vidmar[3,4], Sarath Ranganathan[1,2,4] on behalf of AREST CF.

Affiliations:

[1]Respiratory Diseases Group, Murdoch Children's Research Institute, Victoria, Australia.
[2]Department of Respiratory and Sleep Medicine, Royal Children's Hospital, Victoria, Australia.
[3]Clinical Epidemiology and Biostatistics Unit, Murdoch Children's Research Institute, Melbourne, Australia.
[4]Department of Paediatrics, University of Melbourne, Victoria, Australia.
[5]Allergy, Immunology and Cystic Fibrosis, Alfred Health, Victoria, Australia.
[6]Department of Respiratory Medicine, Monash Children's Hospital, Victoria, Australia.

What was your research question?

This study aimed to explore the links between infection and where early damage due to CF is found in young children with CF.

Why is this important?

Understanding how early lung damage occurs in young children with CF is very important in helping to slow down the progression of lung damage and improving long term outcomes. A few studies have explored lower airway infection using Bronchoalveolar lavage (BAL or lung washings) before, but not the link between the infection and where the earliest lung damage occurred.

What did you do?

This study analysed the results from laboratory tests of BAL samples and of chest CT scans from 124 children enrolled in the AREST CF research program between 2003-2013. We collected results up to 7 years of age from 527 BAL samples and 388 CT scans and at approximately 3 years of age, 90 children (73%) had undergone at least three BAL procedures and 81 (65%) children had had 3 or more chest CT scans.

What did you find?

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We found that lung damage measured by scarring (bronchiectasis) in CT scans was more common in the right lung than the left, and more so in the upper region in the right lung compared with the middle or lower part of the right lung. However, infection was found more often in just the left lung or in both the left and right lung at the same time. Levels of inflammation were greatest when infection was detected in both lungs but could be present in the right lung when infection was only found in the left lung. The results therefore showed that the sites where infection, inflammation and lung damage occurred were often different.

What does this mean and reasons for caution?

Our findings suggest that factors contributing to inflammation and lung damage other than early infection may be important in the earliest development of lung scarring. Such factors potentially include changes in CF mucus, breathing substances into the lung, missing infection with our BAL procedure, or the presence of infections that cannot be found by growing organisms in the laboratory in the usual way. This study highlights the complexity of early lung disease in CF and how much we still need to understand about the earliest infection, inflammation and lung damage.

What's next?

Further studies exploring early lung disease in CF may focus on other factors that drive inflammation besides infection, such as where mucus is found in the lungs and what it is made up of. Studies that improve BAL procedure such as by standardising the ideal amount of saline (salty water) used, how long the saline is in the lung and the suction pressure may be useful.

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cfresearchnews@gmail.com