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Cystic Fibrosis Research News

Title:
Audiometric assessment of paediatric patients with cystic fibrosis

Authors:
Kathryn L. Kreicher[1,2], Michael J. Bauschard[1], Clarice S. Clemmens[1], Concetta Maria Riva[1], Ted A. Meyer[1]

Affiliations:
[1]Department of Otolaryngology-Head & Neck Surgery, Medical University of South Carolina, Charleston, SC
[2]Case Western Reserve University School of Medicine, Cleveland, OH
[3]Department of Paediatrics, Medical University of South Carolina, Charleston, SC

What was your research question?
The purpose of this study was to evaluate hearing impairment in paediatric patients with cystic fibrosis (CF). A chart review examined CF identified patients with hearing loss from normal (no loss) through profound loss. The study utilizes a large paediatric audiologic database to provide a comprehensive analysis of all types of hearing loss in paediatric CF patients to examine predictors of such loss.

Why is this important?
This is the largest comprehensive analysis of all types of hearing loss in paediatric patients with cystic fibrosis. Prevalence of middle ear disease in these children is debated. It is important to understand patterns in middle ear disease and hearing loss among this population to help develop recommendations for routine screening.

What did you do?
This is a retrospective analysis of the AudGen database generated by Children's Hospital of Philadelphia which is a large database containing audiometric data from over 100,000 children. An investigator-written computer program was used to analyse audiograms for type of hearing loss, pure-tone-average, laterality of hearing loss, and change in hearing over time. Medical charts were reviewed to identify factors that influence development and progression of hearing loss.

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What did you find?

We found that 31.8% of children with CF had hearing loss. Estimates of hearing loss in the general paediatric population are widely variable but was 14.9% in a 1998 study. In children with CF, chronic otitis media (middle ear infection), Eustachian tube dysfunction and otorrhea (ear discharge) were positive predictors of hearing loss. Children with CF who had chronic sinusitis (sinus infection) and rhinitis (runny nose) had better hearing than those without sinus disease. Children with a diagnosis of diabetes (including secondary diabetes as a result of CF) had more decline in hearing over time than those without diabetes.

What does this mean and reasons for caution?

Our data suggest that children with more severe sinus disease may be at lower risk for inflammatory middle ear disease and subsequent hearing loss. One explanation is widespread use of nasal sinus irrigation and steroids used in patients with sinusitis, which could help in preventing middle ear disease. Children who develop complications of CF such as diabetes or lung infections should be monitored frequently for hearing loss, and the use of ototoxic drugs should be limited if possible. Unfortunately, our study is limited by our inability to correlate hearing loss with medical therapies such as antibiotic use.

What's next?

Further study is necessary to elucidate the reasons behind these findings. We recommend that all children with CF should be referred to an otolaryngologist and routinely screened for hearing loss.

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cfresearchnews@gmail.com