

Cystic Fibrosis Research News

Title:

Prospective Cohort Study of Ototoxicity in Persons with Cystic Fibrosis following a Single Course of Intravenous Tobramycin

Lay Title:

Study to look at hearing problems in people with cystic fibrosis following a single course of intravenous tobramycin

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What was your research question?

We investigated whether there was a loss of hearing in people with cystic fibrosis (CF) resulting from a single treatment with the antibiotic tobramycin directly into the blood (intravenous, IV). We compared hearing test results from this treatment group to a group of people with CF who were not given any intravenous antibiotic treatment.

Why is this important?

We know that IV tobramycin can cause hearing loss in people with CF, but we don't know how fast this happens or how much hearing a person loses after each IV-tobramycin treatment. We also don't know who will develop hearing loss. Since there are some new drugs which might prevent hearing loss while given tobramycin, it is important to know the scale of the existing problem.

What did you do?

We tested 31 people with CF (18 on IV tobramycin treatment, 13 with no treatment) in our study. We tested a wide pitch range of hearing in each person to identify any hearing loss or change in hearing during the study. We tested those in the treatment group before their 3rd dose (baseline) and at least 30 days after they completed treatment with tobramycin. We tested the non-treatment group using a similar time frame. We compared the hearing tests

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between the two groups to see whether the treatment group showed more hearing loss in either ear after treatment than the non-treatment group.

What did you find?

We discovered that the treatment group had a significant loss of hearing after *one* treatment with IV-tobramycin compared to the non-treatment group. We evaluated our data in a number of different ways, including those recommended by national guidelines for identifying and describing hearing loss. Although the average amount of hearing loss was not huge, some individuals in the treatment group lost considerable hearing. This shows that some people are at a higher risk of hearing loss from tobramycin use than others.

What does this mean and reasons for caution?

Although we know that tobramycin may have side effects like hearing loss, it is important to know that some people are more sensitive to hearing damage after a single treatment of IV-tobramycin. Physicians and people with CF should discuss the potential side effects of these drugs, so that patients know which symptoms to report if hearing problems develop (e.g., ringing in the ears, balance issues or hearing difficulties). This will allow the physician and person with CF to decide if switching treatments is an option, or if (once available) a drug should be prescribed to prevent further hearing damage while people with CF receive these types of antibiotic treatments. Based on these findings, we think researchers should be testing new drugs to prevent or limit hearing loss due to tobramycin treatment (or other similar types of antibiotics).

What's next?

One of the authors of this article is currently trying to start a trial of such a drug to prevent or limit hearing loss. The lead author and her team are also investigating the risk factors for people with CF who may be more likely to develop this type of hearing loss caused by IV tobramycin.

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