



Cystic Fibrosis Research News

Title:

HYPERTONIC SALINE HAS A PROLONGED EFFECT ON MUCOCILIARY CLEARANCE IN ADULTS WITH CYSTIC FIBROSIS

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What was your research question?

Cystic fibrosis (CF) causes mucus to become more difficult to clear from the lung. Hypertonic saline (HS) inhalation helps rehydrate airway mucus and speed up its clearance. We wanted to know if the effect of HS on mucus clearance lasted for at least 4 hours in adults with CF.

Why is this important?

Studies showing the health improvements (e.g. improved lung function) of HS treatment in CF patients have typically been performed on teens and adults. In another study, no clinical benefits were found after HS treatment in CF children who were younger than 6 years. These observations led us to question whether the duration of HS's effect on mucus clearance determines whether or not it improves health outcomes in the patient being treated. We hypothesized that mucus clearance would generally be accelerated for at least four hours in adults with CF compared to healthy volunteers where HS only has a transient effect.

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What did you do?

We measured the rate of mucus clearance in 13 adults with CF at baseline (without any HS), 15 minutes after a dose of HS, and 4 hours after a dose of HS.

What did you find?

We found that, overall, HS inhalation increased mucus clearance for at least four hours. Even though individual responses varied, the rate of mucus clearance measured in an individual 4 hours after HS inhalation was about the same as the rate measured 15 minutes after a dose of HS.

What does this mean and reasons for caution?

These results suggest that HS is a longer-acting drug in CF adults than was previously realized. The results also demonstrate that while not all patients respond to HS, the immediate effect strongly predicts the sustained effect. While these results suggest that a personalized approach to HS use in CF might be possible, we do not yet have proof that the mucus clearance response to HS predicts clinical improvements.

What's next?

Future studies should be aimed at finding ways to determine if a given individual is likely to benefit from HS. It should also be determined whether children with CF, who seem to benefit less from HS, have a shorter duration response to HS.

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