primary studies - published RCT

Acute inhalation of hypertonic saline does not improve mucociliary clearance in all children with cystic fibrosis.

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Study design (if review, criteria of inclusion for studies)

double-blind, randomized, cross-over study

Participants

12 children with CF and normal pulmonary function

Interventions

acute inhalation of 0.12% saline (placebo), or HS

Outcome measures

Mucociliary clearance

Main results

Median [interquartile range] MCC60 and MCC90 in the children on the placebo visit were 15.4 [12.4-24.5]% and 19.3 [17.3-27.8%]%, respectively, which were similar to the adults with 17.8 [6.4-28.7]% and 29.6 [16.1-43.5]%, respectively. There was no significant improvement in MCC60 (2.2 [-6.2-11.8]%) or MCC90 (2.3 [-1.2-10.5]%) with HS, compared to placebo. In addition, 5/12 and 4/12 of the children showed a decrease in MCC60 and MCC90, respectively, after inhalation of HS. A post hoc subgroup analysis of the change in MCC90 after HS showed a significantly greater improvement in MCC in children with lower placebo MCC90 compared to those with higher placebo MCC90 ($p = 0.045$)

Authors' conclusions

These data suggest that percent MCC varies significantly between children with CF lung disease and normal pulmonary functions, with some children demonstrating MCC values within the normal range and other showing MCC values that are below normal values. In addition, although MCC did not improve in all children after inhalation of HS, improvement did occur in children with relatively low MCC values after placebo. This finding suggests that acute inhalation of hypertonic saline may benefit a subset of children with low MCC values.

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See also

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Keywords

hydration; Hypertonic Solutions; pharmacological_intervention; Airway clearance drugs -expectorants- mucolytic- mucociliary-; Inhalation OR nebulised; Respiratory System Agents;