

Cystic Fibrosis Research News

Title:

LOW SODIUM STATUS IN CYSTIC FIBROSIS - AS ASSESSED BY CALCULATING FRACTIONAL Na⁺ EXCRETION - IS ASSOCIATED WITH DECREASED GROWTH PARAMETERS

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What was your research question?

We wanted to investigate 1) what percentage of children with cystic fibrosis (CF) have low sodium status despite normal blood sodium concentrations, and 2) how are their growth measurements (weight, height and body mass index (BMI)) when compared to CF children with normal sodium status and healthy control children.

Why is this important?

Sodium, besides its major role in maintaining normal body water balance and blood pressure, is also important for normal transport of other minerals and nutrients across cells and so for weight gain and growth. Children with CF may lose large amounts of sodium by sweating or diarrhea and therefore may be at risk for sodium depletion and consequently failure to thrive.

What did you do?

We determined the concentrations of sodium and creatinine (a waste product) in blood and urine to calculate the fractional sodium excretion, i.e. an indicator that gives a good

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estimation of the body's sodium status. We also measured weight, height and BMI of each child and compared these parameters to the sodium status results.

What did you find?

Nearly three quarters of the children with CF in the study were found to have decreased sodium status values despite normal blood sodium concentrations. This group also had lower average values for height, weight and BMI than those CF children with normal fractional sodium excretion values and healthy control children. Sodium concentrations in blood or urine did not correlate with weight, height or BMI.

What does this mean and reasons for caution?

Our study shows that sodium status in CF children may be better assessed by determining fractional sodium excretion than by measuring sodium concentrations in blood and/or urine alone. CF children with decreased fractional sodium excretion values have a higher risk for failure to thrive. This further supports earlier findings of an important role for sodium as a growth factor. However, sodium is only one out of many factors that may jeopardize normal weight gain and growth in CF children.

What's next?

To further evaluate the role of sodium in failure to thrive future studies will have to investigate CF children with low sodium status in context with other factors of growth deprivation including nutritional/digestive deficiencies, pulmonary function, pseudomonas infection and possibly CFTR mutations causing phenotypes of different severity.

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