

Cystic Fibrosis Research News

Title:

Urinary sodium/creatinine ratio is a predictor for fractional sodium excretion and related to age in patients with Cystic Fibrosis

Lay Title:

Evaluating the sodium status in relation to your age will be possible with a single spot urine.

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What was your research question?

Is measuring sodium/creatinine ratio in a urine sample an alternative for a more cumbersome method, fractional sodium excretion, which requires a simultaneous blood draw and urine sample?

Why is this important?

Individuals with Cystic Fibrosis experience excessive salt losses through sweat during sports and in hot ambient temperature but also during periods of fever and diarrhea. Fractional sodium excretion is used to evaluate an individual's sodium status and the need for salt

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supplementation. A normal sodium status corresponds to a fractional sodium excretion between 0.5 and 1.5%. This method uses sodium and creatinine concentrations in both urine and blood. It therefore, requires a parallel blood and urine sample. But since conditions change, repeated measurements are needed to adjust salt supplementation. The calculation studied as an alternative uses only a urine sample.

What did you do?

Individuals with Cystic Fibrosis followed at the Ghent University Hospital receive an annual check-up including a blood draw and urine sample. At that moment, also their weight and height was taken and lung function was measured. Using these results, collected between January 2019 and December 2021, the fractional sodium excretion was calculated. Several calculations were performed using only urinary concentrations as an alternative for fractional sodium excretion. Patients were categorized according to age, into four groups: < 6 years, 6 - < 12 years, 12 years - < 18 years and ≥ 18 years.

What did you find?

The sodium/creatinine ratio was significantly associated with the fractional sodium excretion and was the best predictor of a fractional excretion equal to or above 0.5%. However, the value corresponding to a fractional excretion of 0.5% was different according to age. Cut-off values predicting a fractional sodium excretion of 0.5% for each age group were 17.6 (mmol/mmol) < 6 years, 14.8 (mmol/mmol) 6-<12 year, 11.7 (mmol/mmol) 12-<18 year and 10.3 (mmol/mmol) ≥ 18 years.

What does this mean and reasons for caution?

The urinary sodium/creatinine ratio is a reliable alternative for the more cumbersome fractional sodium excretion. Based on a spot urine the sodium status can be evaluated. However, this is limited to patients with a normal kidney function and without the use of diuretic medication.

What's next?

Our findings can also help to prevent patients from an excessive salt intake. The upcoming CFTR modulators will limit the salt losses through sweat in persons with CF. Therefore, by calculating the cut-off corresponding with a fractional sodium excretion of 1.5%, the diet can be adapted to avoid salt excesses.



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