

Correspondence

The Influence of Extracellular Fluid Volume on the Renal Bicarbonate Threshold

Sir:

The paper of OETLIKER and ROSSI (Pediat. Res. 3: 140-148, 1969) concerning the renal bicarbonate threshold in Lowe's syndrome prompts us to report on a very similar finding observed in a boy with this disorder, now aged 4 years. He shows all signs of the syndrome, buphthalmos, cataracts, mental retardation, areflexia, muscular hypotonia, renal tubular acidosis, marked generalized hyperaminoaciduria, and rickets. We performed a chronic NH_4Cl loading test, 3 days, 100 mEq/m²/day; the single dose NH_4Cl loading test with a rather high dosage of the salt, 130 mEq/m²; and the bicarbonate titration test, following a 2-day period of intravenous rehydration and introduced by a moderate NH_4Cl load, 70 mEq/m².

The minimal pH values after the various dosages of NH_4Cl were as follows: 5.66 on day 3 of chronic loading with 100 mEq/m²/day; 6.32 4 h after ingestion of 70 mEq/m² in a single dose; and as low as 4.98 about 4 h after ingestion of 130 mEq/m². Bicarbonate titration

gave a threshold value between 18 and 19 mEq/liter bicarbonate in plasma. The patient has normal glomerular function (endogenous creatinine clearance, 116 ml/min/1.73 m², mean of seven determinations); a noteworthy fact, since both patients of OETLIKER and ROSSI had a slightly depressed glomerular filtration rate.

Our finding corroborates the view that patients with Lowe's syndrome have a low renal bicarbonate threshold even in the presence of retained glomerular function and they may be able to produce an acid urine with a pH value below 5.00.

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Corrigendum

Pediatric Research 3: 522 (1969)

Due to a typographical error, L. Stern appeared as L. Stein in the Acknowledgment section. We regret the error.