Variability of Urinary Chloride -A Clue to Diuretic Abuse

B.F.	Bernard F.	Jones
P.R.	Paul R.	Trevillian

Department of Nephrology, John Hunter Hospital, Newcastle, Australia

Bernard F. Jones, MD, Department of Nephrology, John Hunter Hospital, Newcastle, NSW 2300 (Australia)

Dear Sir,

Measurement of urinary chloride concentration has an important role in the diagnosis of hypokalaemic metabolic alkalosis [1]. Hypokalaemic metabolic alkalosis resulting from diuretics is usually considered to cause high urinary chloride [1]. However, because the effect of loop diuretics is short-lived, it would be expected that urinary chloride level may vary considerably in a person using loop diuretics. This point has received little emphasis in the literature, yet serves as an important clue to diuretic abuse, and indeed highly variable urinary chloride levels are not seen in other conditions causing hypokalaemic metabolic alkalosis.

We have encountered a 56-year-old female with hypokalaemic metabolic alkalosis who consistently denied using diuretics. For over 1 year, serum potassium, total carbon dioxide, and creatinine ranged from 1.7 to 2.8 mmol/l (1.7-2.8 mEq/l), from 31 to 49 mmol/l (31-49 mEq/l) and from 0.12 to 0.21 mmol/l (1.4-2.4 mg/dl), respectively. The abnormalities corrected readily with intravenous saline and potassium supplements. Outpatient measurement of urinary chloride level varied widely within short periods of time (fig. 1). Moreover, the diurnal pattern of urinary chloride excretion was consistent with avoidance of diuretics at the end of the day (fig. 2). Of these outpatient urine samples, five of five were found to contain frusemide.

This case demonstrates highly variable urinary chloride levels in a person who was using frusemide surreptitiously. As diuretic abuse often results in a perplexing clinical situation, more emphasis needs to be given to this easily obtained laboratory measurement as an indicator of diuretic abuse. A diurnal pattern of urinary chloride excretion may also be an adjunct to diagnosis.

Reference

1 Parker MS, Oster JR, Perez GO, et al: Chronic hypokalaemia and alkalosis. Approach to diagnosis. Arch Intern Med 1980;140:1336-1337.

o
ε 30

E

jo

Q 20

7AM 11AM 7AM 1PM 7AM 3 PM 3 PM 9 PM 3 PM 9 PM

D₁ D₂ D₃ D₄ D₅

Fig. 1. Urinary chloride concentration on random days (1 mmol/l = 1 mEq/l). D = Day.

7 AM

9 PM

11 AM 1 PM 3 PM

Fig. 2. Urinary chloride concentration in relation to time of day (1 mmol/l = 1 mEq/l).

©1992 S. Karger AG, Basel

0028-2766/92/

0614-0472\$2.75/0