

Severe hypernatremia and hyperchloremia in an elderly patient with IgG-kappa type

Kenrick Berend

St Elisabeth Hospital, Willemstad,
Curaçao

Dear editor

Imashuku et al¹ describe a 77-year-old male patient with multiple myeloma who was admitted to the hospital after suffering a pelvic bone fracture due to a road traffic accident. Several days after admission the arterial blood gas showed a pH of 7.481; arterial carbon dioxide tension (PaCO₂) of 28.2 mmHg; arterial oxygen tension (PaO₂) of 84.0 mmHg; HCO₃⁻ of 20.8 mmol/L (normal; 23–31 mmol/L); and an anion gap of 8.9 mmol/L (normal; 12 mmol/L). These data, as the authors concluded, were suggestive of metabolic acidosis. First, this is not true because a high pH and low PaCO₂ confirm a respiratory alkalosis. Since the test was conducted days later we may expect a chronic respiratory alkalosis to be present, perhaps because of pain or a secondary pulmonary problem, as may be expected with a relatively low PaO₂. In chronic respiratory alkalosis one would expect the HCO₃⁻ to decrease about 4 mmol/L with every 10 mmHg decrease of PaCO₂.² If the initial HCO₃⁻ had been about 25 mmol/L, the expected PaCO₂ would be about 20.28 mmol/L, almost identical with the patient's HCO₃⁻.

Second, because the authors erroneously considered this a case with a normal anion gap metabolic acidosis, they mistakenly considered the high urine anion gap of 48 mmol/L to be indicative of a distal renal tubular acidosis due to multiple myeloma. However, the urine anion gap may be useful in evaluating the renal ammonium excretion only in a normal anion gap metabolic acidosis. In respiratory alkalosis, the urine anion gap has no added value in this context.

Third, a low anion gap is a feature of multiple myeloma, particularly of IgG myeloma, because the paraprotein is a cation.³

Disclosure

The author reports no conflicts of interest in this communication.

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Correspondence: Kenrick Berend
St Elisabeth Hospital, 193 JHJ
Hamelbergweg, Willemstad, Curaçao
Email kenber2@me.com

Authors' reply

Shinsaku Imashuku

Naoko Kudo

Kagekatsu Kubo

Division of Hematology, Takasago-seibu Hospital, Takasago, Japan

Correspondence: Shinsaku Imashuku
Division of Hematology, Takasago-seibu
Hospital, 1-10-41 Nakasuji,
Takasago, Japan 676-0812
Tel +81 79 447 0100
Fax +81 79 447 0180
Email shinim95@mbox.kyoto-inet.or.jp

Dear editor

Dr Berend's critical comments on the blood gas analysis are greatly appreciated. Although respiratory alkalosis in multiple myeloma was reported in apparently dyspneic patients due to

interstitial pneumonitis,^{1,2} we did not notice any respiratory distress in our patient. Thus, Dr Berend's evaluation of our blood gas data was unexpected, but that helps in understanding the patient's underlying pathophysiology. As pointed out, chronic pain might have affected respiratory conditions in our patient. We thank Dr Berend for his reminder on the complex acid-base balance in myeloma patients.

Disclosure

The authors report no conflicts of interest in this communication.

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