

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Acid-Base Balance-Electrolyte Quiz – Case 15

A 60-year-old smoker was admitted to the hospital with an exacerbation of chronic bronchitis and dyspnea. Laboratory investigation showed: Arterial pH 7.20, HCO_3^- 24 mEq/L, PCO_2 60 mmHg, PO_2 60 mmHg, serum sodium 140 mEq/L, potassium 4 mEq/L, chloride 110 mEq/L.

Which are the acid-base disorders of the patient?

- a. Acute respiratory acidosis
- b. Chronic respiratory acidosis
- c. Chronic respiratory acidosis and respiratory alkalosis
- d. Chronic respiratory acidosis and metabolic acidosis

Comment

From the patient's history (chronic bronchitis) and the acidemia

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associated with hypercapnia the dominant acid-base abnormality is chronic respiratory acidosis. In this case the expected HCO_3^- concentration is 31 mEq/L [a 3.5 mEq/L increase of serum HCO_3^- concentration for each 10 mmHg increase of PCO_2]. Since the measured HCO_3^- levels are lower than expected, an associated hyperchloremic metabolic acidosis (with a normal anion gap) is present. A careful analysis of the patient's history revealed the presence of a diarrheal syndrome.

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