Further Section

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Quiz of the Month

Questions
Submitted by Stephen H. Norris, MD, Department of Internal Medicine, Division of Nephrology, Texas Tech University Health Sciences Center School of Medicine, Lubbock, Tex., USA

History: A 47-year-old black man with a 20-year history of alcoholism was admitted to the emergency room with a 3-day history of vomiting bright red blood, diarrhea, and dizziness. He had been consuming a ‘fifth’ of whiskey daily prior to the onset of his present illness and denied drinking anything else. He had not eaten for several weeks. His past medical history included three previous admissions for bleeding esophageal varices treated with sclerotherapy and two admissions for acute pancreatitis.

Physical examination: The patient was alert and oriented, appearing both acutely and chronically ill and somewhat older than his stated age. His blood pressure supine was 120/80 mm Hg with a pulse of 90/min; blood pressure standing was 90/50 with a pulse of 130/min. He was afebrile and breathing deeply at a rate of 34/min. His lungs were clear to auscultation and percussion, the cardiovascular examination was unremarkable, his liver span measured 12 cm in the midclavicular line, there was slight guarding and tenderness without rebound in the midepigastrium, and bowel sounds were normoactive. His melanotic stool was guaiac positive. There was no clubbing, cyanosis, or edema, and his neurologic examination was within normal limits.

Initial laboratory data: Serum sodium 135 mmol/l, potassium 3.2, chloride 101, bicarbonate 7.1 mmol/l, urea nitrogen 12mg/dl, creatinine 1.8, glucose 54, calcium 9.1, phosphate 3.8, magnesium 1.5mg/dl, total protein 6.2 g/dl, albumin 3.7 g/dl, total serum bilirubin 0.6 mg/dl, ALT 41 U/l, AST 48, alkaline phosphatase 67, lactate dehydrogenase 252, creatine phosphokinase 221 U/l, uric acid 9.7 mg/dl, ethanol 19.6, salicylate < 2 mg/dl, ketones negative, osmolality 283 mosm/kg, and lactic acid 9.5 mg/dl. Arterial blood gases while breathing room air: pH7.15, PCO2 21mm Hg, pCO2 > 2 96 mm Hg. Complete blood count: WBC 18,000/mm3, hemoglobin 17.2 g/dl, hematocrit 48.9%, platelets 356,000/mm3. Prothrombin time 12.8/13 s, partial thromboplastin time 29.6/30 s. Urine analysis: glucose negative, ketones > 80 mg/dl, (pH 5.0), blood negative, protein 30 mg/dl, urobilinogen 0.2 mg/dl, specific gravity 1.018, microscopic sediment normal.

Hospital course: A nasogastric aspirate initially revealed red blood in the stomach which cleared rapidly with saline irrigation. Two large-bore catheters were inserted intravenously. Six units of packed erythrocytes were ordered. The patient was transferred to the medical intensive care unit after his vital signs had been stabilized with 2 liters of intravenous lactated Ringer’s solution. The gastrointestinal and psychiatry services were consulted.

What is the most likely explanation for this patient’s acid-base disturbance?
What is the pathophysiology of ‘alcoholic’ ketoacidosis? Why is this term misleading? Why are serum ketones not detected when urine ketones are present? What caused the hypoglycemia? Why is the anion gap elevated?
The presence of severe acidemia and an osmolar gap in an alcoholic should suggest intoxication with what substance(s)?
The answers to the questions appear on p. 175 of this issue.