Chapter 24, Water, Electrolyte, and Acid-Base Balance

"Apply What You Know" Answers

p. 930—The excessive ADH produced by such tumors causes the kidneys to retain water even though they continue to excrete sodium. This leads to hypotonic hydration.

p. 934—Excess aldosterone promotes sodium retention and potassium depletion, potentially leading to hypokalemia. Hypernatremia does not occur because proportionate amounts of water are retained with the sodium. However, the retention of both sodium and water can lead to the fluid imbalance called volume excess. Hypokalemia can lead to paralysis because it induces greater diffusion of K^+ from the ICF to the ECF, causing nerve and muscle cells to become hyperpolarized and less excitable than normal.

p. 937—By the time blood passes through the systemic capillaries and enters the veins, it has picked up CO_2 from respiring tissues. The CO_2 lowers its pH.

p. 937—The most important protein buffer in the plasma is albumin, and in erythrocytes it is hemoglobin.

p. 941—A person with emphysema can be expected to show a lower urine pH and higher ammonium chloride concentration than a healthy individual. This is because emphysema produces respiratory acidosis, the kidneys secrete more acid into the tubular fluid, and they produce more ammonia to buffer the acid.