

CORRESPONDENCE

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What Is an Acceptable Preoperative Serum Potassium Level for Surgery?

To the Editor:—Conventional wisdom suggests that a preoperative serum potassium level of 3.5 and 3.0 mm/l is acceptable for surgery in digitalized and nondigitalized patients, respectively, although two prospective clinical studies do not support this time-honored belief. Patients with chronic hypokalemia subjected to a variety of surgical interventions¹ or cardiac/major vascular surgery² did not exhibit a higher incidence of intraoperative dysrhythmias. At our institution, we believe that symptomatic preoperative dysrhythmias, rather than hypokalemia per se is a stronger predictor of intraoperative dysrhythmias. However, a serum potassium level less than 2.7 mm/l for elective surgery would be considered "risky" regardless whether the patient is symptomatic. We recently anesthetized a patient with a serum potassium of approximately 2.0 mm/l, who received a cadaveric kidney.

The anesthesia on-call team was informed at 6 PM that a cadaveric kidney has just been cleared to be transplanted to a 33-yr-old woman with end-stage chronic glomerular nephritis. She had been in good health without other illnesses, aside from her renal disease. The anesthesia on-call team also was informed that the patient had undergone dialysis a few hours earlier *via* a peritoneal dialysis catheter. Her admission medications consisted of FeSO_4 , CaCO_3 , Amphojel, and Rocaltrol. Physical examination revealed a 154-cm, 77-kg woman with a blood pressure of 108/64 mmHg and heart rate of 72 beats/min. Pertinent available laboratory data showed a leukocyte count of 14,000 cumm; hematocrit 30.0%, platelets 498,000; prothrombin time 14.7 s, and partial thromboplastin time of 30 s. Postdialysis blood chemistry data were not in the chart, and an electrocardiogram taken at 7:23 PM in the preoperative holding area showed normal sinus rhythm, ST abnormality, and a prolonged QT.

Anesthesia was induced at 8 PM with 150 ug fentanyl and 22 mg etomidate, and tracheal intubation was facilitated by atracurium 40 mg. Anesthesia maintenance consisted of isoflurane/nitrous oxide/oxygen with intermittent boluses of 50 ug fentanyl. Vital signs were stable throughout the 2.5-h surgery.

At 9:15 PM, the postdialysis blood chemistry was made available to the anesthesia personnel and revealed a serum potassium of 2.0 and 1.9 mm/l reported at 6:30 and 8:13 PM, respectively. Believing that this severe hypokalemia is the immediate result of peritoneal dialysis and the potassium loss is primarily extracellular, 40 mm KCl was added to a liter of Ringers' lactate solution and infused over the ensuing 2 h. The patient was admitted postoperatively to the surgical intensive care unit, where no additional KCl was given. Her serum

potassium was 4.1 mm/l 48 h after the induction of anesthesia. She was discharged 12 days after surgery without complications.

This case report is interesting from two standpoints. First, it is our belief, with reasonable supportive data³ that chronic asymptomatic hypokalemia is fairly benign, but acute serum potassium loss without adequate time for compensatory physiologic processes to take place may be more harmful to the cardiovascular system. The acute loss of potassium from peritoneal or hemodialysis would be extracellular loss of potassium primarily, because the anephric patient generally is deficient in total body potassium.⁴ Second, even the most experienced clinician will readily admit that a serum potassium level of 2.0 mm/l is less than what is acceptable even if the patient is hemodynamically stable and asymptomatic.

This communication is not intended to suggest that we would anesthetize the next asymptomatic hypokalemic patient with a serum potassium of 2.0 mm/l. However, this case supports our belief that patients with asymptomatic hypokalemia can be anesthetized safely.

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