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Moving away from Kayexalate, sodium polystyrene sulfate

To the Editor,

Earlier this year, a death due to hyperkalemia at our hospital saddened me. Recommendations to give sodium polystyrene sulfate had been rejected, and a fatal arrhythmia occurred as hemodialysis was about to be started. Some physicians at our hospital are reluctant to use sodium polystyrene sulfate in patients with severe hyperkalemia, despite its 4-decade-old record as a reliable method to remove potassium from the body. One physician gave as the reason, "Our department is moving away from Kayexalate."

Sodium polystyrene sulfate is a cation-exchange resin that absorbs potassium in the gut. It is typically given with insulin, which redistributes potassium into cells, and with intravenous calcium to antagonize electrophysiological abnormalities of hyperkalemia when they are present. Sodium polystyrene sulfate's onset of action is 1 to 4 hours, so together with the action of calcium from 1 to 30 minutes and of insulin from 15 to more than 60 minutes, continual protection results. Hemodialysis is also used for potassium removal but can take hours to initiate especially after hours when the dialysis unit is closed, is risky in the unstable patient, and is often unnecessary due to the success of medical therapy.

The "move away from Kayexalate" is based on the concern that it can produce intestinal necrosis as seen in numerous reports [1] and on expert opinion that sodium polystyrene sulfate is of questionable efficacy and should be replaced by hemodialysis [2–4]. With regard to intestinal necrosis, this is not any more common statistically in hospitalized individuals given sodium polystyrene sulfate than the background rate in patients with no exposure to the agent and is actually rare, 0.05% to 0.14% [1]. In addition, this complication is virtually nonexistent in outpatients, with no cases in 850 patients taking 1860 doses [1] or in 14 patients on chronic treatment taking more than 6000 doses [5].

Regarding efficacy, nephrologists have long observed meaningful (1-3 mmol/L) falls in serum potassium concentrations with 1 or more doses of sodium polystyrene sulfate. This is confirmed by every study of its use in hyperkalemia in the last 12 years [6–12]; single 60 to 80 g doses produce average falls in serum potassium of 0.9 to 1.7 mmol/L [6–8,10,12].

The move away from Kayexalate may result in unnecessary mortality. In life-threatening hyperkalemia, this agent should be used freely with greater and repeat doses in larger patients and in those with higher serum potassium levels.

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Influence of peripheral venous catheter size and resident postgraduate years on success of peripheral venous catheterization☆,☆☆

To the Editor,

Peripheral venous catheterization is a frequently required basic procedure in hospital care. However, scientific consideration of the keys for successful catheterization has been inadequate.

According to previous reports, the general success rate of peripheral venous catheterization is 74% to 88% [1]. Two nonrandomized controlled trials have implied that the larger the veins are, the easier they are to be cannulated [2,3]. There is an observation study conducted in prehospital emergency settings, which revealed that larger gauge use among 16, 18, and 20 gauge (G) is related significantly with higher success rates [4]. But this relation seemed attributed to selection bias: larger catheters are chosen for larger blood vessels, which have higher likelihood of successful cannulation. Another observation study found no significant difference in success rates among 18-, 20-, and 22-G catheters used by nurses [5]. A randomized controlled trial of 14- and 16-G catheter use by military medical cadets found no difference in success rates [6].

Table 1
Internal and external diameter, with the length of catheter used in this study

Catheter size (G)	Internal diameter (mm)	External diameter (mm)	Length (mm)
20	0.80	1.1	32
22	0.60	0.9	25
24	0.47	0.7	19

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