

Clinicalreport

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An Important CDER Report from the FDA

Safety of Sodium Phosphate Oral Solution*

Background

Sodium phosphate oral solution is available in the United States as an over-the-counter preparation indicated "for the relief of occasional constipation." It is professionally labeled "for use as part of a bowel-cleansing regimen in preparing the patient for surgery or preparing the colon for X-ray or endoscopic examination." In 1998, because of data indicating that accidental overdosing and deaths had occurred when a 240-mL container was mistakenly used instead of a 45-mL or 90-mL container, the Food and Drug Administration limited the bottle size of oral sodium phosphate to no more than 90 mL. The agency also required that the product be labeled with a warning to consumers not to exceed the recommended dose of 20 to 45 mL unless directed by a doctor. At that time, the agency concluded that the data were not sufficient to demonstrate the safe-

ty of more than 45 mL of oral sodium phosphate solution in a 24-hour period as part of a bowel-cleansing regimen.

Reports

The FDA has recently completed another safety review on oral sodium phosphate from reports in the FDA Adverse Events Reporting System database, the FDA Drug Quality Reporting System database, and the medical literature. Serious electrolyte disturbances (hypernatremia, hypokalemia, hyperphosphatemia, hypocalcemia), dehydration, metabolic acidosis, renal failure, tetany, and death have been attributed to physicians prescribing more than the 45-mL dose (usually a minimum of 90 mL during a 24-hour period) as a bowel preparation for colonoscopy, surgery, or barium enema and/or prescribing it for people at medical risk.¹⁻⁵

Several articles demonstrate that even

people without medical contraindications receiving more than 45 mL of oral sodium phosphate develop electrolyte shifts.⁶⁻¹⁰ Changes in hematocrit, serum sodium, blood urea nitrogen, serum osmolality, and body weight after ingesting sodium phosphate oral solution suggest that a mild contraction of intravascular volume can occur in this population. Shifts in serum calcium, serum phosphorus, serum sodium, and serum potassium can be statistically significant when compared to baseline values but, generally, electrolyte values remain within normal range. However, serum sodium as high as 148 mEq/L, serum potassium as low as 2.9 mEq/L, serum phosphorus as high as 12.4 mg/dL, and serum calcium as low as 8.0 mg/dL have been reported.

There is a single case report of a young woman, treated with prednisone and alendronate for Crohn's disease, who developed hypocalcemia and carpopedal spasm after taking oral sodium phosphate.¹¹ This case report suggests that bone antiresorptive agents, known to be associated with mild hypocalcemia, may increase the possibility of developing hypocalcemia with oral sodium phosphate.

Discussion

These reports suggest that patients who are taking more than 45 mL of oral sodium phosphate as a prescribed bowel preparation are vulnerable to electrolyte shifts. In populations with absolute or relative medical contraindications to the use of sodium phosphate, these electrolyte shifts can be clinically significant, resulting in symptomatic dehydration, renal failure, metabolic acidosis, tetany, and death. A published survey of Canadian colonoscopists demonstrates that physicians who routinely prescribe bowel preparations are not adequately informed as to the medical risks and contraindications associated with the use of sodium phosphate oral solution.¹² Health professionals need to become better informed about the safe use of oral sodium phosphate.

Conclusion

Physicians need to be aware that people at increased risk for electrolyte disturbances (eg, congestive heart failure,

ascites, renal insufficiency, dehydration, debility, gastrointestinal obstruction, gastric retention, bowel perforation, colitis, megacolon, ileus, inability to take adequate oral fluid, taking diuretics or other medications that affect electrolytes) may experience serious adverse events if they use sodium phosphate oral solution. It would be reasonable to consider obtaining baseline and posttreatment sodium, potassium, chloride, bicarbonate, calcium, phosphate, blood urea nitrogen, and creatinine values in people (especially those at increased risk) directed to take more than 45 mL of oral sodium phosphate in a 24-hour period. This may enable physicians to avert serious electrolyte problems.

References

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