Information for Healthcare Professionals

Oral Sodium Phosphate Products for Bowel Cleansing

FDA ALERT [5/2006]: Acute phosphate nephropathy, a type of acute renal failure, is a rare, but serious adverse event associated with the use of oral sodium phosphates (OSP) for bowel cleansing. Documented cases of acute phosphate nephropathy include 21 patients who used an OSP solution (such as Fleet Phospho-soda or Fleet ACCU-PREP) and one patient who used OSP tablets (Visicol). No cases of acute phosphate nephropathy or acute renal failure have been associated with OsmoPrep, an OSP tablet bowel preparation recently approved. Individuals at increased risk of acute phosphate nephropathy include: those of advanced age, those with kidney disease or decreased intravascular volume, and those using medicines that affect renal perfusion or function [diuretics, angiotensin converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), and possibly nonsteroidal anti-inflammatory drugs (NSAIDs)].

This information reflects FDA's current analysis of data available to FDA concerning these drugs. FDA intends to update this sheet when additional information or analyses become available.

To report any unexpected adverse or serious events associated with the use of these drugs, please contact the FDA MedWatch program using the contact information at the bottom of this sheet.

Diagnosis

Acute phosphate nephropathy presents as acute renal failure with minimal proteinuria and a bland urine sediment in patients recently exposed to OSP. Renal biopsy reveals: acute and/or chronic renal tubular injury (depending on time to diagnosis), calcium-phosphate crystal deposition in the distal tubules and collecting ducts, and no other pattern of histological injury. These pathological findings are consistent with nephrocalcinosis.

Considerations

Healthcare professionals should consider the following when choosing a bowel cleanser for their patients:

- Avoid use of OSP in patients with kidney disease, impaired renal function or perfusion, dehydration, or uncorrected electrolyte abnormalities.
- Avoid exceeding recommended OSP doses and avoid concomitant use of laxatives containing sodium phosphate.
- Use OSP with caution in patients taking diuretics, ACE inhibitors, ARBs, and NSAIDs.
- Encourage patients to take the correct OSP dose and drink sufficient quantities of clear fluids during bowel cleansing. Two published articles suggest that use of an

electrolyte rehydration solution may decrease the electrolyte abnormalities and hypovolemia associated with OSP bowel cleansing.[3,4]

- Obtain baseline and post-procedure labs (electrolytes, calcium, phosphate, BUN, and creatinine) in patients who may be at increased risk for acute phosphate nephropathy, including those with vomiting and/or signs of dehydration.

- Use hospitalization and intravenous hydration during bowel cleansing to support frail patients who may be unable to drink an appropriate volume of fluid or may be without assistance at home.

Data Summary

In September 2003, Desmeules et al. published a case report of acute phosphate nephropathy followed by persistent renal insufficiency in a 71-year old woman who took 90 mL of OSP solution as a cathartic.[1]

In November 2005, Markowitz et al. published a case series study describing 21 biopsy-proven cases of acute phosphate nephropathy in patients who took OSP and had no history of hypercalcemia or superimposed renal pathology.[2] Twenty of these 21 cases of acute phosphate nephropathy occurred in patients who used OSP solution, and one case occurred in a patient who used OSP tablets (Visicol). Of the 21 cases, 17 occurred in females; 13 patients were age 62 years or older; 14 patients were using an ACE inhibitor or ARB; 4 patients were using a diuretic; and 3 patients were using a NSAID. Four patients had mildly elevated baseline serum creatinine levels between 1.3 and 1.7 mg/dL, and 17 patients had normal baseline creatinine levels. Eighteen patients were diagnosed with acute renal failure within two months of colonoscopy, and all were diagnosed within five months. At follow-up (mean 16.7 months post-biopsy), four patients were on hemodialysis (two with normal pre-procedure creatinine), and 17 patients had chronic renal failure with a mean serum creatinine of 2.4 mg/dL.[2]

In addition to the published cases cited above, 10 unique cases of renal failure associated with use of OSP solution and 10 cases of renal failure associated with use of OSP tablets were identified through FDA's Adverse Event Reporting System (AERS). Most of these cases did not have a renal biopsy or biopsy results were not available; therefore, the causes of renal failure were not clearly established in these patients.

Implications

OSP bowel cleansing involves a large phosphate load, fluid shifts, and decreased intravascular volume. Rarely, acute phosphate nephropathy and chronic impairment of renal function may occur after bowel cleansing with OSP products. To optimize safety for individual patients, healthcare providers should be familiar with the risk profiles of OSP products used for bowel cleansing.

For more detailed information about acute phosphate nephropathy, see the FDA Science Background Paper: Acute Phosphate Nephropathy and Renal Failure Associated with the Use of Oral Sodium Phosphate Bowel Cleansing Products.

References

[1]Desmeules et al. Acute phosphate nephropathy and renal failure. NEJM. 2003 Sep 4; 349(10): 1006 – 7.

[2]Markowitz et al. Acute phosphate nephropathy following oral sodium phosphate bowel purgative: an under-recognized cause of chronic renal failure. J Am Soc Nephrol. 2005 Nov; 16 (11): 3389 – 96.

[3]Tjandra JJ, Tagkalidis P. Carbohydrate-electrolyte (E-lyte®) solution enhances bowel preparation with oral Fleet® Phospho-soda®. Dis Colon Rectum 2004 Jul; 47(7): 1181 – 86.

[4] Barclay RL, Depew WT, Vanner SJ. Carbohydrate-electrolyte rehydration protects against intravascular volume contraction during colonic cleansing with orally administered sodium phosphate. Gastrointest Endosc. 2002:56(5): 633 - 38.