Enema-Induced Hypocalcemic Tetany

J.	Jordi	de Otero
X.	Xavier	Borrellas
E.	Eugeni	Ferrer-Prevosti
L.	Luis	Piera

Department of Nephrology, Vall d'Hebron General Hospital, Barcelona, Spain

Dr. Jordi de Otero, Huelva 87 3° 3', E-08020 Barcelona (Spain)

Dear Sir,

Phosphate enemas are usually recommended for alleviation of constipation and sometimes they are used at the patient's home. Apparently safe, their use could be uncontrolled in some circumstances. Local intolerance of self-limited abdominal pain are the commonest side effects observed. Few cases of hypocalcemic tetany in adults are known [1-3]. We present a patient with severe chronic renal insufficiency who developed enema-induced hypocalcemic tetany.

A 62-year-old woman with diabetic neuropathy, retinopathy and nephropathy was admitted to our hospital for constipation and acute urinary retention. Upon examination she had peripheral edema. Serum creatinine was 7.3 mg/dl (645.32 μ mol/l) with creatinine clearance 8 ml/min (1.3×10^{-4} l/s), ionic calcium 5.01 mg/100 ml (1.24 mmol/l), phosphate 7.3 mg/100 ml (2.35 mmol/l), potassium 4.8 mmol/l, sodium 135 mmol/l, hemoglobin 7 g/dl (70 g/l), white blood cell count 26×10^9 /l, proteins 4.67 g/dl (46.7 g/l), albumin 2.3 g/dl (23 g/l). By the passage of a urethral catheter, 2,300 ml of urine were obtained. Severe bilateral dilatation of the collecting system was observed by ultrasonography. After 1 week, her abdomen became distended without peristalsis. A plain abdominal X-ray revealed colonic distended bowels. The patient received three consecutive phosphate enemas, containing 20 g of sodium biphosphate and 40 g of sodium phosphate each within 36 h. The patient's general condition deteriorated and both Chvostek's and Trousseau's signs were positive. Consequently, the enemas were

stopped. Blood test results showed ionic calcium 3.42 mg/100 ml (0.85 mmol/l) and phosphate 11.8 mg/100 ml (3.8 mmol/l). Intravenous fluids and calcium gluconate were administered. The severe metabolic perturbations normalized in the following days and the colonic ileus resolved by itself. Serum electrolyte levels returned to normal values. The obstructive uropathy was attributed to neurogenic bladder.

Hyperphosphatemia with hypocalcemia is often related to compromised renal function [4], but hypocalcemic tetany is rare and requires a precipitating factor to occur. Most of the documented reports of hyperphosphatemia and hypocalcemia after usage of phosphate

enemas have occurred in children [5, 6]. In adults, the incidence is low [1-3]. The clinical severity is probably not related with the number of products administered because a case of hypocalcemic tetany following the administration of a single preparation is known [2]. Phosphate enemas are safe if both renal function and colonic mucosa are normal [1]. If not, severe metabolic abnormalities may appear. The absorption of large amounts of phosphate from a sick and distended colon with increased luminal permeability can induce hyperphosphatemia and hypocalcemia. A reduced glomerular filtration is unable to excrete the remaining phosphate. If fecal impaction or a distended colon with increased luminal permeability are present, the enema is retained, which may result in a prolonged provision of phosphate [1]. Retention of a significant fraction of an enema is possible in normal subjects [7]. Our patient had an atonic colon and severe renal dysfunction, both predisposing to the development of hyperphosphatemia and hypocalcemic tetany. Considering the severity of the syndrome, physicians should beware of phosphate enemas. In patients with renal function and colonic mucosa abnormalities, we suggest the use of soapy isotonic enemas.

References

- Korzets A, Dicker D, Chaimoff H, Zevin D: Life-threatening hyperphosphatemia and hypocalcemic tetany following the use of fleet enemas. *JAGS* 1992;40:620-621.
- Biberstein M, Parker B. Enema-induced hyperphosphatemia. *Am J Med* 1985;79:645-646.
- Haskell LP: Hypocalcaemic tetany induced by hypertonic-phosphate enema. *Lancet* 1985;2: 1433.
- Schaefer K: Uraemic hyperphosphataemia. What is the therapy of choice? *Nephrol Dial Transplant* 1989;4:1005-1007.
- Goldfinger, P: Hypokalemia, metabolic acidosis and hypocalcemic tetany in a patient taking laxatives. *J Mt Sinai Hosp* 1969;36:113.
- Honig PJ, Holtzapple PG: Hypocalcemic tetany following hypertonic phosphate enemas. *Clin Pediatr* 1975;14:678-679.
- Flentie EH, Cherkin A: Electrolyte effects of the sodium phosphate enema. *Dis Colon Rectum* 1958;1:295-299.