MILK-ALKALI SYNDROME : A REVERBERATION OF THE PAST

Dear Sir,

Milk-alkali syndrome is caused by the ingestion of large amounts of calcium and absorbable alkali with resulting hypercalcaemia. If unrecognised and untreated, milk-alkali syndrome can lead to metastatic calcification and renal failure. This syndrome was originally recognised in the 1920s during administration of the Sippy regimen, consisting of milk and bicarbonate, for treatment of peptic ulcer disease. With the development of nonabsorbable alkali and histamine-2 blockers for treatment of peptic ulcer disease, milk-alkali syndrome became a rare cause of hypercalcaemia; however, with increased use and promotion of calcium carbonate for dyspepsia and as calcium supplementation, a resurgence of milk-alkali syndrome has occurred in the last few years.[1]

We describe a 70-year-old African American man who presented with fever and chills during dialysis. He also had generalised weakness, malaise and decreased appetite. He has a past medical history of hypertension, diabetes mellitus, stroke, end-stage renal disease on haemodialysis, and spinal osteomyelitis. He has never smoked or used illicit drugs. Family history was unremarkable. Home medications included metoprolol, amlodipine, simvastatin, rosiglitazone and nephrovite. Vital signs were stable and physical examination was unremarkable. Laboratory results showed markedly elevated serum calcium 13.7 mg/dL and albumin 4.0 g/dL. Rest of the investigations revealed haemoglobin of 12.5 g/dL, haematocrit 37%, white blood cells 8.2/mm, platelets 276/uL, serum phosphorous 4.5 mg/dL, bicarbonate 30 mmol/L, blood urea nitrogen 26 mg/dL, serum creatinine 3.9 mg/dL and alkaline phosphatase 86 IU/L. Electrolytes and liver function tests were within normal limits. Serum intact parathyroid hormone (PTH) 1 pg/ml (Reference range 11–54 pg/ml), PTH-related protein was normal, serum angiotensin converting enzyme level was 22 units/L (range 12–35 units/L), 25-hydroxy vitamin D 20 ng/ml (range 10–50 ng/ml) and 1,25-dihydroxy vitamin D was 4 pg/ml (range 20–76 pg/ml). Serum protein electrophoresis was normal and urinary Bence-Jones protein was negative. Urinary calcium was 392 mg/24 hours (range 100–300 mg/day). Electrocardiogram and chest radiograph were unremarkable. Abdominal ultrasonography showed normal kidneys and urinary tract. Computed tomography of the chest, abdomen and pelvis, and isotope bone scan were normal. After thorough history, it was revealed that patient was complaining of heartburn and dyspepsia, and was using over-the-counter (OTC) calcium carbonate 1,000 mg/tab and aluminum hydroxide and magnesium hydroxide antacids for the past one year. A diagnosis of milk-alkali syndrome was confirmed and the patient responded well to intravenous saline and was eventually discharged home with instructions not to take OTC antacids.

Milk-alkali syndrome – the triad of hypercalcaemia, metabolic alkalosis and renal insufficiency – is associated with ingesting large amounts of calcium and absorbable alkali.[2] The milk-alkali syndrome became rare with the advent of modern ulcer therapy with nonabsorbable antacids, histamine-2 blockers, and sucralfate. An increased frequency of this syndrome seems likely with the growing popularity of the use of calcium carbonate as an antacid or as calcium supplementation to prevent osteoporosis.[3] Oral calcium carbonate is now the predominant source of calcium and alkali associated with the development of milk-alkali syndrome (with or without milk intake). The amount of calcium carbonate required to be ingested per day to cause milk-alkali syndrome is reported to vary from as low as 4 g to as high as 60 g.[4,5] A diagnosis of milk-alkali syndrome may be missed unless a detailed history is obtained, and information about OTC preparations is essential in all patients presenting with hypercalcaemia, as physicians and patients are frequently unaware that many non-prescription medications contain calcium and alkali.[3]

Yours sincerely,

RA Javed
MA Rafiq
K Marrero
J Vieira

Department of Internal Medicine
Long Island College Hospital
339 Hicks Street
Brooklyn, New York
NY 11201, USA
Tel: (1) 646 309 7655
Fax: (1) 718 780 1300
Email: drranaasim@hotmail.com

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