in our patient are not the intestinal calcium–phosphate accumulations induced through the oral intake of lanthanum carbonate. According to their unique and thorough observation displaying a blister package of a lanthanum pill, it is likely to assume that radio-opacity of lanthanum itself causes such changes in the gut. However, it is difficult to distinguish whether the observed opacifications represent the high-contrast metallic-like substance lanthanum alone or whether they further include neighbouring calcium–phosphate conglomerates. A radiographic investigation of lanthanum pills in solutions with different phosphate and calcium concentrations in vitro may be useful to further study such issues.

The sixty-four-dollar question, however, is to resolve the radio-opacity of lanthanum. We have now further looked in the scientific literature and found, to our own surprise, that there was another previous medical use of lanthanum which had already answered the enigma of radio-opacity of lanthanum carbonate in patients with stage 5 CKD.

Conventional glass ionomer cement (GIC) is a kind of dental cement used for a variety of purposes in odontology [2]. Literally it is the generic name of a group of materials based on the reaction of silicate glass powder and polyalkenoic acid. The material acquires its name from its formulation of a glass powder and an ionomer that contains carboxylic acids [2]. These tooth-coloured anti-cariogenic materials were first designed in 1972 by Wilson and Kent [3] for use as restorative materials for anterior teeth but since they bond chemically to dental hard tissues and release fluoride for a relatively long period, their applications had expanded many fold [2]. Notably, calcium flouroaluminosilicate glass cements are X-ray transparent and are indistinguishable from caries under X-ray conditions. A clinician using X-rays to examine a crown would mistake a conventional GIC for the caries-dental decay.

Therefore, metal-reinforced GICs were first introduced in dental care in 1977 [2]. Cements containing barium, strontium as well as lanthanum glasses were designed as they had the advantage of increased radio-opacity. Mainly, the addition of silver amalgam alloy powder to conventional materials increased the physical strength of the cement and thereby provided radio-opacity [2]. However, a scientific controversy over the use of amalgams, which also contain mercury, started since then in the dental community. Though mercury itself is a potent neurotoxin, amalgam fillings are considered safe by most dentists. Recent random clinical trials have found no evidence of neurological harm associated with their use in children, examining a period of 5–7 years following treatment [4,5]. Still, some worry exists about the difficulties of conclusively excluding the possibility of neurological effects [6].

We would like to underline that lanthanum carbonate is a well-tolerated, effective drug to lower serum phosphate levels [7]. It already has shown significant promise in clinical trials in CKD patients [7]. Aluminium was the initial phosphorus binder used, but was replaced by calcium-containing binders because of the development of aluminium toxicity [7]. Unfortunately, many nephrologists feel threatened by the allegation that treatment with calcium-based phosphate binders e.g. calcium acetate or calcium carbonate may aggravate hypercalcaemia and induce coronary artery as well as cardiac calcification, thereby imposing a greater risk for cardiovascular mortality in CKD patients [7]. Therefore, the non-calcium/non-aluminium phosphate binder lanthanum carbonate is considered an efficient, probably safe medical alternative and widely used in clinical practice for the treatment of hyperphosphataemia in CKD patients [7].

The main message we wished to convey in our recent report was to keep in mind the disturbing abdominal radiographic appearance when oral lanthanum intake is present. The observation from Jana et al. adds valuable pathophysiological insight into this fact. Nephrologic patients treated with lanthanum carbonate who need a diagnostic abdominal radiograph should intermittently discontinue their lanthanum carbonate intake to assure an adequate visualization and an unimpeachable diagnosis.

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4. Bellinger DC, Trachtenberg F, Barregard L. Is there a link between calcium oxalate crystalluria, orlistat and acute tubular necrosis?

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Is there a link between calcium oxalate crystalluria, orlistat and acute tubular necrosis?

Sir,

Acute oxalate nephropathy describes the development of calcium oxalate crystalluria, causing tubular obstruction and tubular injury [1]. Calcium oxalate crystal deposition occurs in both primary and secondary hyperoxaluria. Orlistat has been recently identified as a possible cause of acute oxalate nephropathy [2,3]. Orlistat is a gastrointestinal and pancreatic lipase inhibitor used in the treatment of obesity, which is believed to cause enteric hyperoxaluria by inducing a state of fat malabsorption [2,3]. However, calcium oxalate crystals are found frequently in the kidneys, and in particular in association with acute tubular necrosis (ATN), especially if the patient has been anuric or oliguric
for prolonged periods [4]. It is therefore very difficult to determine when calcium oxalate crystals are the cause or the result of acute oliguric renal failure. To ascertain a link between calcium oxalate crystals and acute tubular necrosis, we undertook an audit of the renal biopsies performed at Gloucestershire Royal Hospital between February 1997 and August 2007. There were a total of 855 renal biopsies done in that period. We relied on retrospective review of the pathology reports to identify renal biopsies with both ATN and crystals. In total, there were 20 cases of ATN. In 10 of the cases, the cause of ATN was not identified, in 2 cases the cause was volume depletion and in 3 cases the cause was the use of non-steroidal anti-inflammatory drugs (NSAIDs). Three further cases of ATN were associated with liver disease, one with heart failure and one with sepsis. There were 11 renal biopsies with crystals deposition. In six of them, the crystals were not identifiable. There was one case of cholesterol crystals, one case of urate crystals and one case of calcium phosphate crystals due to the use of fleet for bowel preparation prior colonoscopy and two cases of calcium oxalate crystals. Both cases of calcium oxalate crystals also had unexplained ATN and the patients were taking orlistat at the time of presentation. One of these patients died; the other had partial recovery of his renal function after a short period on dialysis. His renal function remained stable despite continuing taking orlistat. Our audit does not directly support an association between the use of orlistat, oxalate crystalluria and ATN. However, the retrospective use of biopsy reports is a limitation in drawing conclusions. Patients with pre-existing renal disease, undiagnosed mild forms of primary hyperoxaluria or secondary hyperoxaluria, who also take orlistat, may be predisposed to developing acute oxalate crystalluria if their renal function deteriorates for other reasons. The identification of high-risk patients treated with orlistat and the regular monitoring of their renal function might reduce the theoretical risk of renal failure due to acute oxalate nephropathy.

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Negative outcome studies in end-stage renal disease: how dark are the storm clouds?

The Salt Factor

Sir,

It is incredible that in 2008, an editorial review by such learned gentlemen as Covic and Goldsmith fails to discuss the ‘salt factor’ in their gloomy attitude towards the prognosis of ESRD patients [1]. It is even more astonishing that this omission occurred after KDOQI guidelines revised their advice on salt intake and recommended a salt-restricted intake for all CKD patients [2]. Clearly, they are not aware of the outstanding reductions in CVD and mortality reported by Nancy Cook in a 10-year follow-up of prehypertensive, but otherwise normal, population maintained on a low-salt diet [3]. Finally, they do not cite the two centres that have reported the best long-term survival data on dialysis in the world; both have employed obsessive salt restriction as a main part of their programme [4,5]. Even given the long gestation period of the review and its revision, one must question whether the review process was adequate for this editorial comment to see the light of day. One must conclude that, given their extensive conflict of interest declarations, there can be little commercial benefit from recommending a low-salt diet.

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Reply

Sir,

We thank Dr Stanley Shaldon for his interest in our article [1]. He is of course quite correct to point out that we