Rapid Alterations in Plasma Aluminium in Association with Varied Oral Aluminium Intake in Dialysis Patients

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Dear Sir,

Aluminium toxicity in patients with end-stage renal failure has received increasing attention over the past decade. The specific osteodystrophy, encephalopathy and anaemia are widely regarded as indications for che-lation therapy with desferrioxamine [1–3]. Recently, it has been suggested that plasma aluminium levels are a good guide to the risk of clinical toxicity and that plasma aluminium falls only slowly after removal from exposure [4].

It is our experience that plasma aluminium values vary widely and rapidly with alterations in oral aluminium intake. Aluminium is strongly tissuebound, and thus plasma aluminium is a poor index of total body aluminium burden [5]. We present 2 illustrative cases which highlight the profound alterations in plasma aluminium which occur as a consequence of variations in oral aluminium intake (table I).

Plasma aluminium in these patients clearly rose to extraordinary levels as a result of gastro-intestinal absorption of an excessive oral aluminium intake [5]. There was no overt clinical toxicity associated with hyperaluminiumaemia in either patient. Undoubted it is possible that repeated elevations of plasma aluminium, in the presence of a minimal aluminium exposure, reflect an increased total body aluminium burden. However, a single elevated aluminium level should prompt a reduction in aluminium exposure (usually substitution of calcium carbonate for aluminium-containing phosphate binders and/or provision of aluminium-free dialysate) with the expectation of a rapid reduction in plasma aluminium towards normal values. We believe plasma aluminium per se poorly reflects chronic toxicity in patients ingesting large quantities of aluminium-containing preparations; they should not be used in isolation to assess the risk of clinical aluminium toxicity.

Table I.

Patient 1: CAPD Patient 2: HD

CAPD = Continous ambulatory peritoneal dialysis; HD = hae-modialysis. Both patients have used aluminium-free dialysate since commencing dialytic therapy. 1 Normal value: < 3.75 µM/l.

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