Colestimide co-administered with atorvastatin attenuates the progression of vascular calcification in haemodialysis patients

Vascular calcification is believed to have a crucial role in the excess cardiovascular mortality and morbidity in patients with end-stage renal disease (ESRD). Recent evidence suggests that uraemic vascular calcification is an active cell-mediated process [1]. An epidemiological study observed an association between lipid-lowering therapy and vascular calcification [2]. However, no prospective investigation has been published to prove an effect of lipid-lowering therapy on the progression of vascular calcification in patients with ESRD.

We therefore conducted the present study that prospectively compared the rate of change in the amount of vascular calcification before and during lipid-lowering therapy in haemodialysis patients. The aortic calcification index (ACI) was estimated by computed tomography (CT) as described previously [3]. At the time of the first CT, fasting lipid levels as well as serum levels of calcium (Ca) and phosphorus levels were measured and lipid-lowering therapy with colestimide (1.5 g/day) and atorvastatin (10 mg/day) was initiated. Patients were instructed to keep any other medical therapy unchanged.

A total of 29 patients completed the protocol and could be evaluated. Progression of aortic calcification was significantly less pronounced during treatment with colestimide and atorvastatin compared with the period before treatment was initiated. The mean ACI in the first CT was 35.6 ± 20.2%. The median ACI in the second CT, after an average interval of 22.9 ± 3.2 months on treatment, was 29.0 ± 16.2% (P < 0.05). Average total cholesterol and LDL cholesterol levels in the untreated period were 246 ± 38 and 156 ± 41 mg/dl, respectively. A mean reduction of 21% (total cholesterol) and 44% (LDL cholesterol) was achieved. Colestimide can be used as a phosphate binder to treat uraemia in end-stage renal disease patients.

Conflict of interest statement. None declared.

Department of Medicine
Kidney Center
Tokyo Women’s Medical University
8-1 Kawada-cho, Shinjuku-ku
Tokyo 162-8666, Japan
Email: nitta@kc.twmu.ac.jp


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Effect of renal failure and dialysis on circulating ghrelin concentration in children

Sir,

Ghrelin promotes the release of growth hormone, elevates food intake and induces obesity [1]. In healthy children, ghrelin concentrations are inversely correlated with body mass index and age [2]. Circulating ghrelin levels of humans do not show gender-related differences [3]. In adult patients with end-stage renal disease (ESRD), a three-fold rise in plasma ghrelin levels has been reported. Bilateral nephrectomy in mice causes a marked increase of plasma ghrelin levels. Ghrelin concentrations decline significantly during haemodialysis (HD) [4]. It was the objective of the present study to investigate whether ghrelin is elevated in serum of paediatric patients with renal failure and whether it is eliminated by HD, because there have been no data in children so far.

Subjects and methods. Ghrelin concentrations were measured in serum of eight chronic HD patients, six automated peritoneal dialysis (APD) patients and 14 patients with chronic renal failure (CRF) not yet on dialysis. Each patient group was compared with a control group of healthy children matched according to BMI and age [2]. Circulating ghrelin levels of healthy children do not show gender-related differences [3]. In adults, ghrelin concentration in children is lower than in adults so far.

Ghrelin concentrations were measured using a commercial radioimmunoassay (Phoenix Pharmaceuticals, Belmont, CA) [5]. Mann–Whitney test was performed to compare patient groups with control groups. Paired values were compared using Wilcoxon matched pairs test. A P value of < 0.05 was considered significant.

Results. Ghrelin was detected in all dialysate samples. Its dialysate concentration remained stable during the HD session (data not shown). The amount of cleared plasma ranged from 2.46 to 2.931/l. Ghrelin in serum declined significantly (P < 0.03) during HD. It was significantly elevated in HD patients before HD compared with healthy subjects (P < 0.05). No significant difference to healthy children was observed after HD. In APD patients (P < 0.001) and CRF patients (P < 0.03), we observed a significant elevation as well, compared with healthy controls. For results see Table 1.

Discussion. Our results show that ghrelin is significantly elevated in serum of children with CRF or ESRD treated by HD or APD. Ghrelin is cleared by HD. This is consistent with data in adults [4]. The high clearance of ghrelin either suggests a powerful counter-regulation of serum ghrelin by

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