like NMR-angiography it would range from DM 36042 to 22972.

We thank Dr Caskey for the opportunity to reemphasize the necessity of careful clinical screening as a first step in establishing the diagnosis of renal artery stenosis.

Letters

Increased plasma GDNF levels in patients with chronic renal diseases

Sir, Glial cell-line-derived neurotrophic factor (GDNF) is a member of the transforming growth factor (TGF) superfamily and is considered to be a physiological trophic factor for neurons [1]. During fetal development, GDNF is highly expressed in metanephric kidneys, as well as in the nervous system [2,3], and GDNF-deficient mice completely lack kidneys [4–6]. GDNF signalling is mediated through the c-ret proto-oncogene [7]. During kidney morphogenesis, c-ret and GDNF are expressed by abutting cellular population [9]. Ret mRNA is localized in the epithelial cells of the branching ureteric bud, whereas GDNF is produced by the surrounding metanephric mesenchymal cells [7]. Moreover, GDNF has been shown to be a growth factor for mesangial cells and thus has been implicated to be a player in the genesis of progressive renal damage [8]. However, little is known about GDNFs behaviour in the presence of renal dysfunction. We report here that chronic renal failure patients have very high plasma GDNF level.

Patients and methods. The plasma GDNF levels of 15 normal individuals who had normal routine biochemical values, and of 45 chronic renal failure (CRF) patients on regular haemodialysis (from 3 months to 15 years) were evaluated (mean age ± standard error of the mean (SEM), 60.2 ± 1.97 years). Of the CRF patients, 18 suffered from diabetic nephropathy (mean ± SEM, 65.8 ± 4.24 years), 11 from nephrosclerosis (mean ± SEM, 66.5 ± 4.52 years), and 16 from chronic glomerulonephritis (mean ± SEM, 56.3 ± 2.63 years). No acute disorders were present during the 1 month prior to the study. Blood samples of CRF patients were taken immediately before haemodialysis. Blood samples of normal subjects were taken at 9 am. The plasma was kept frozen at −80°C until assayed. GDNF was measured with a sandwich ELISA kit (Promega, USA) that detects human GDNF but not TGF-beta or nerve growth factor (NGF). The detection limit of GDNF assay was 2 pg/ml. TGF-beta-1 levels were quantified using ELISA (R&D systems, USA). Overall differences between the groups were analysed with the Mann–Whitney’s U test. Correlation coefficients between variables were calculated by Spearman’s non-parametric correlation analysis.

Results. Table 1 summarizes the plasma level of GDNF in control and CRF groups. GDNF was not detected in plasma from any of the healthy controls. However we tried to detect the plasma GDNF using a concentrating membrane filter system (Amicon Centricup, USA), which increases the detection limit of GDNF assay to 0.5 pg/ml, we failed to detect a significant level of GDNF in any of the control samples studied. In contrast, tests of plasma from CRF patients showed that GDNF was present in 53% (24/45) of samples studied, with a range of 2–38 pg/ml (average 7.8 pg/ml). Plasma GDNF levels in diabetic nephropathy, nephrosclerosis, and chronic glomerulonephritis were not significantly different (Mann–Whitney’s U test). The numbers of patients are listed in brackets.

Table 1. Plasma GDNF concentrations in patients with chronic renal failure and in controls. All values are mean ± SEM (pg/ml).

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Patients</th>
<th>GDNF (pg/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>(n=15)</td>
<td>not detected</td>
</tr>
<tr>
<td>Chronic renal failure; total</td>
<td>(n=45)</td>
<td>7.8 ± 1.7</td>
</tr>
<tr>
<td>Diabetic nephropathy</td>
<td>(n=18)</td>
<td>7.0 ± 2.5</td>
</tr>
<tr>
<td>Nephrosclerosis</td>
<td>(n=11)</td>
<td>7.7 ± 3.6</td>
</tr>
<tr>
<td>Chronic glomerulonephritis</td>
<td>(n=16)</td>
<td>8.6 ± 3.1</td>
</tr>
</tbody>
</table>

Fig. 1. Correlations of plasma GDNF concentration with plasma TGF-beta-1 level in patients with CRF from diabetic nephropathy.
Continuous veno-venous haemofiltration versus continuous veno-venous haemodialysis in severe lithium self-poisoning: a toxicokinetics study in an intensive care unit

Sir,
Continuous haemofiltration in an intensive care unit (ICU) has been proposed for the treatment of acute lithium poisoning \(^{[1]}\). There is still no agreement concerning the usefulness of continuous veno-venous therapy (CVVT) with dialysis or filtration or intermittent haemodialysis (IHD) in lithium poisoning \(^{[2]}\). There may be haemodynamic consequences such as severe lithium poisoning collapse. Therefore, extracorporeal renal replacement therapy may be poorly tolerated \(^{[3]}\). We report a case of such intoxication treated with continuous veno-venous haemodialfiltration (CVVHDF) in which dialysis and filtration could be analysed.

Case. A 49-year-old woman under long-term treatment with lithium carbonate was admitted to the ICU for acute lithium self-poisoning. On admission she had cerebellar ataxia, seizures, hypothermia, parkinsonian movements or electrocardiographic abnormalities. Serum biochemistry showed: Medicine Masayuki Kanazawa