Plasma exchange in the treatment of acute renal failure of myeloma

Sir,

The article by Haubitz and Peest, ‘Myeloma—new approaches to combined nephrological–haematological management’ [1] addresses a very important issue in clinical practice. However, very little is said on the management of myeloma patients presenting with acute renal failure (ARF), particularly on the role of plasma exchange (PE) in this setting. PE has been used to reduce plasma concentrations of light chains in patients with renal insufficiency [2], and it has been recommended in the management of ARF in myeloma patients [3]. However, findings from a recent large, prospective, randomized trial of PE in the treatment of ARF in patients with newly diagnosed myeloma, failed to show any benefit [4]. We reviewed our single-centre experience over a 10-year period (January 1995–December 2005) on the effect of PE in 55 myeloma patients (31 men, 24 women; mean age 71±11 years) presenting with ARF on either survival and rate of recovery of renal function. ARF was defined as a doubling of serum creatinine with respect to the basal level, over a 48 h period, and/or reduction of urine output <500 ml/24 h in spite of correction of hypovolaemia, hypercalcaemia and metabolic acidosis. Twenty-seven patients received 5–8 (median 6) PE treatments (3 on consecutive days and the others on alternate days) with 50 ml/kg body weight of 5% human albumin and saline as replacement fluid. Twenty-eight patients did not receive PE treatment and were considered as control group. VAD or dexamethasone were administered to all patients according to haematologist’s prescription. Table 1 shows the baseline clinical and laboratory characteristics of the two groups of patients. No significant differences were observed between groups. Figure 1 shows Kaplan–Meier survival analysis for all-cause mortality (left panel), and renal death (need for dialysis) (right panel) in the two groups of patients. No significant effect of PE on either patients or renal survival was observed at 36 months. Twenty-three patients (42%) died. Causes of death were: sepsis 11%, pulmonary infection 34%, cachexia 22%, other causes 33%. Our data agree with those of Clark and colleagues [4]. We acknowledge that our observations are not only of renal death (need for dialysis) (right panel) in the two groups of patients. No significant effect of PE on either patients or renal survival was observed at 36 months. Twenty-three patients (42%) died. Causes of death were: sepsis 11%, pulmonary infection 34%, cachexia 22%, other causes 33%. Our data agree with those of Clark and colleagues [4]. We acknowledge that our observations are neither prospective nor randomized, however, they are representative of a large and widespread clinical approach to this problem worldwide. Extension of follow-up to a 36-month period did not show any significant benefit of PE, not only on


**Table 1.** Baseline characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Control group patients (28 patients)</th>
<th>Plasma exchange group (27 patients)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>69±10</td>
<td>67±9</td>
<td>NS</td>
</tr>
<tr>
<td>Serum creatinine (mg/dl)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>7.4±4.1</td>
<td>9.3±4.5</td>
<td>NS</td>
</tr>
<tr>
<td>Serum calcium (mg/dl)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>9.1±1.2</td>
<td>9.0±1.5</td>
<td>NS</td>
</tr>
<tr>
<td>Diuresis (ml/day)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1048±759</td>
<td>1006±784</td>
<td>NS</td>
</tr>
<tr>
<td>Oliguria (&lt;500 ml/24 h; n; %)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>6/28 (21)</td>
<td>5/27 (18)</td>
<td>NS</td>
</tr>
<tr>
<td>Osteolytic lesion (n; %)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16/28 (57)</td>
<td>12/27 (44)</td>
<td>NS</td>
</tr>
<tr>
<td>Hypercalcaemia (n; %)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3/28 (11)</td>
<td>5/27 (18)</td>
<td>NS</td>
</tr>
<tr>
<td>Monoc. BJ proteinuria (n; %)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>23/28 (82)</td>
<td>20/27 (74)</td>
<td>NS</td>
</tr>
<tr>
<td>K&lt;sup&gt;a&lt;/sup&gt;</td>
<td>10/28 (35)</td>
<td>10/27 (37)</td>
<td>NS</td>
</tr>
<tr>
<td>λ type (n; %)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16/28 (57)</td>
<td>13/27 (48)</td>
<td>NS</td>
</tr>
<tr>
<td>Dialytic treatment (n; %)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16/28 (57)</td>
<td>18/27 (66)</td>
<td>NS</td>
</tr>
</tbody>
</table>

<sup>a</sup>Plus-minus values are mean ± SD; comparison between means: unpaired Student’s t-test.

<sup>b</sup>Comparison between categorical data: χ<sup>2</sup> test.

doi:10.1093/ndt/gfl697

Advance Access publication 23 November 2006
Renal cysts and diabetes due to a heterozygous HNF-1\(\beta\) gene deletion

Sir,

Diabetic nephropathy has become the major cause of end-stage renal failure in Western countries. However, in the renal cysts and diabetes (RCAD) syndrome, nephropathy is an independent feature rather than a direct consequence of the diabetes. This RCAD syndrome is caused by mutations of the hepatocyte nuclear factor-1\(\beta\) (HNF-1\(\beta\)) [1]. It is a non-diabetic renal disease resulting from abnormal renal development, and a non-ketotic diabetes mellitus characterized by an early onset, due to a primary defect in the function of the \(\beta\)-cells of the pancreas [2].

We present a 28-year-old proband, diagnosed with diabetes mellitus in his adolescence. He had received low-dose once-daily insulin therapy since the age of 18 years, and presented himself to our University Hospital at the age of 28. On clinical examination, the patient was lean (BMI of 19.4 kg/m\(^2\)), the daily insulin requirement was low (0.19 IU/kg), the basal C-peptide concentration was reduced to 0.29 pmol/ml and liver enzyme levels were in the normal range. The patient displayed no antibodies to glutamate decarboxylase or IA-2, but a chronic renal insufficiency with a glomerular filtration rate of 25.5 ml/min. Unlike most patients with diabetic nephropathy, our patient had no relevant proteinuria (0.15 g/day). He was hyperuricaemic, and had a low fractional excretion rate of uric acid (2.2%).

We performed a magnetic resonance imaging of the abdomen, which revealed multiple renal cysts and an atrophic pancreatic body and tail (Figure 1). Furthermore, the right kidney and the right ureter were duplicated. His birth had been pre-term at the 35th gestational week with a birth weight of 1870 g (5th centile). Neither his parents, nor his two sisters showed any clinical signs of diabetes or nephropathy.

The association of diabetes mellitus, renal cysts and urogenital anomalies prompted us to suspect that our patient has an HNF-1\(\beta\) mutation. The molecular genetic analysis of the HNF-1\(\beta\) gene by sequencing failed to detect a mutation [2]. Therefore, a multiplex ligation-dependent probe amplification assay was performed, which revealed a heterozygous deletion of the entire HNF-1\(\beta\) gene, thus confirming the diagnosis of RCAD syndrome [3].

Patients with an HNF-1\(\beta\) gene mutation present with renal abnormalities before the manifestation of diabetes mellitus; in most cases, renal abnormalities are present \(\textit{in utero}\) [4].

Conflict of interest statement. None declared.

Chair and Division of Nephrology
Spedali Civili and University of Brescia
Brescia
Italy
Email: eziomov@libero.it


doi:10.1093/ndt/gfl628