Decreased Prostaglandin-9-Ketoreductase Activity in Erythrocytes of Patients on Maintenance Hemodialysis

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Dear Sir,

An increased urinary prostaglandin E2/prostaglandin F2α (PGE2/PGF2α) ratio has been recently observed by Schneider et al. [1] in patients with chronic renal failure. According to the authors, the observed modification might result from a decreased prostaglandin-9-ketoreductase (PG-9-KR) activity in the kidney and could contribute to the maintenance of sodium excretion. Indeed, an inverse relationship between sodium tubular reabsorption rate and the PGE2/PGF2α ratio was previously demonstrated in isolated dog kidney [2]. Moreover, the activity of PG-9-KR could be modulated by salt intake [3]. We have thus measured PG-9-KR and PG-15-dehydrogenase (PG-15-DH) activities in erythrocytes of control subjects and of stable patients on maintenance hemodialysis using a technique described elsewhere [4]. In brief, PGF2α was measured by radioimmunoassay in erythrocyte lysates after incubation at 37°C with PGE2 and NADPH (60 min) for PG-9-KR activity or with 15-keto-PGF2α and NADPH (120 min) for PG-15-DH activity. Results are presented in Table I. Our observation of a decreased PG-9-KR activity in erythrocytes from uremic patients is thus consistent with the hypothesis of Schneider et al. [1] that renal PG-9-KR would be decreased in this pathological condition. This decreased activity seems to be specific for PG-9-KR and not linked to a generalized uremic-related defect in erythrocyte enzymatic activities, since PG-15-DH activity was comparable in control and uremic subjects. Why a modification of the kidney enzyme would be reflected in the erythrocytes remains a puzzling question: the involvement of a circulating inhibitor is possible.

Table I. PG-9-KR and PG-15-DH activities in erythrocytes of control subjects and stable patients on maintenance hemodialysis, expressed as nanograms PGF2α produced in 60 min per milligram hemoglobin (mean ± SEM)

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<thead>
<tr>
<th></th>
<th>Control (n = 18)</th>
<th>Hemodialysis (n = 21)</th>
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<tr>
<td>PG-9-KR</td>
<td>3.80 ± 0.30</td>
<td>2.75 ± 0.24</td>
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<tr>
<td>PG-15-DH</td>
<td>0.77 ± 0.05</td>
<td>0.70 ± 0.05</td>
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References
