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

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Dear Sir,

An increased urinary prostaglandin E₂/prostaglandin F_{2α} (PGE₂/PGF_{2α}) 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/PGF_{2α} 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, PGF_{2α} 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-PGF_{2re} 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 PGF_{2α} produced in 60 min per milligram hemoglobin (mean ± SEM)

Control (n = 18)	Hemodialysis (n = 11)		
PG-9-KR	3.80 ± 0.30	2.75 ± 0.24	p < 0.02
PG-15-DH	0.77 ± 0.05	0.70 ± 0.05	NS

References

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