Dear Sir,

We read the letters by Hene et al. [1] and by Aurel et al. [2] on the effect of captopril in Bartter’s syndrome (BS) with great interest. The clinical features and therapeutic focus in BS are chronic hypotension and severe hypokalemia, but the ideal therapy for patients with BS remains to be determined. Captopril is an oral angiotensin-converting enzyme (kininase II) inhibitor and blocks the formation of angiotensin II, resulting in the reduction of aldosterone secretion [3]. As hypokalemia in BS is in part due to the hyperactivity of the renin-angiotensin-aldosterone system, the use of captopril may have to be considered. However, it is generally accepted that renal potassium loss is not solely due to hyperaldosteronism, because bilateral adrenalectomy fails to relieve severe hypokalemia [4]. Furthermore, even when aldosterone is suppressed to the normal range by drugs such as aminoglutethimide, dexamethasone and prostaglandin (PG) synthesis inhibitors, serum potassium levels remain low [5, 6]. In addition, aldosterone secretion may be normal or even reduced in some patients with BS [7, 11].

We treated 2 patients with BS [1 was previously reported in detail by Sasaki et al., 5] in whom the initial dose of captopril (12.5 mg, p.o.) induced severe hypotension within 30–60 min and in whom exogenous angiotensin II and/or norepinephrine infusion was required constantly for at least 7 h to maintain even ordinary blood pressure levels. One of these patients received a PG synthesis inhibitor, indomethacin, rectally during the vasoconstrictor infusion. PG synthesis inhibitors do not only enhance the pressor response to injected vasoconstrictors but also attenuate the hypotensive effects of captopril (fig. 1). In another patient, unexplained tetany occurred within 60 min after captopril administration. We reported that an angiotensin II antagonist (1-Sar,8-Ile AII) led to high circulating levels of angiotensin II in this syndrome (even furosemide abuse with BS) contributes to blood pressure maintenance [8, 9]. However, we did not expect captopril to induce such a severe fall in blood pressure. Although the effects of captopril on PG production are inconclusive, the involvement of PG in these effects may be hypothesized by virtue of the fact that kinins are potent stimulators of PG synthesis and release

Breakfast

\[ \text{KCl 6 g} \]

\[ \text{ Piperazine 2.5 mg p.o.} \]
Captopril
Indomethacin 0.25 mg rectally
Blood pressure
100 mm Hg
PRA ng/ml/h PAC ng/dl Ang. II pg/ml

Fig. 1. Blood pressure response to the initial administration of captopril (12.5 mg, p.o.) in a patient with Bartter’s syndrome. Note the requirement for long-time infusion of vaso-pressor agents to maintain ordinary blood pressure.

PRA = Plasma renin activity (RIA, normal: 0.3–2.9 ng/ml/h); PAC = plasma aldosterone concentration (RIA, normal: 3.5–17.5 ng/dl); Ang. II = angiotensin II (RIA, normal: less than 25 pg/ml). All supine position.

Worepinephrine
Norepinephrine
Ang. II 80 ng/kg/min
¾ 200 SS
200 ng/kg/m
2

Indomethacin 0.25 mg rectally

KCl 1.1

Noon 12:30 RM 1:00 2:00 2:30 3:00 3:30 4:00 4:30 5:00

Sasaki/Okumura/Kawasaki

[10]. Alternatively, increased renal and extrarenal (vascular) PG production or circulating bradykinin may account for the reduced vascular responsiveness to angio-tensin II and/or norepinephrine in BS [11]. This is an additional explanation for the undesirable effects of captopril in BS.

Captopril should be administered with great caution to patients with BS, even with care as to the initial small dose. Such patients may be at an increased risk for irreversible renal insufficiency and/or hypotensive shock if vasoconstrictors are not immediately infused.

References

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