Does Effective Renal Plasma Flow Increment Predict Response to Captopril Monotherapy in Essential Hypertension?

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Dear Sir,

It has been shown that about half of the patients with essential hypertension fail to increase effective renal plasma flow (ERPF) or to enhance renal vascular responsiveness to angiotensin II (All) when they switch to a high sodium intake [1]. This combination of abnormalities raises the possibility of an inappropriate level or action of All within the kidney [2]. Monotherapy with All converting enzyme inhibitor in this subgroup of hypertensive patients has lowered blood pressure and increased ERPF [3]. The following preliminary clinical study was conducted to assess if a correlation exists between these two parameters.

Eleven male patients (40 ± 5 years, mean $\pm$ SD) with mild to moderate uncomplicated essential hypertension of short duration (8 ± 3 months) were studied. All medications were held for 2 weeks and baseline 24-hour urinary creatinine, sodium and potassium were obtained, as well as a nuclear study to measure ERPF, utilizing a computerized program and a single injection of ^{131}I [4]. Patients were instructed to continue their usual salt intake, captopril 50 mg twice daily was started and a second ERPF measurement was obtained after 10–14 days.

In 8 of the 11 patients blood pressure responded to captopril ($147/105 \pm 8/4$ to $125/86 \pm 9/6$ mm Hg) with concomitant rise of ERPF from baseline of 410 ± 41 to 520 ± 40 ml/min/1.73 m² (fig. 1). On the contrary, neither a hypotensive effect nor an increment in ERPF was demonstrated in the other 3 patients who manifested normal baseline ERPF (558 ± 53 ml/min/1.73 m²). Sodium intake (160 ± 75 mmol) was not restricted during the study period and it did not seem to correlate with blood pressure response.

Such findings are in accord with previous studies showing an average reduction of 20% of renal blood flow

600

550

500

450-

400

350-

C

Fig. 1. Changes in baseline ERPF (B) with captopril (C). Continuous lines represent responders while broken lines denote those with no response.

in about two thirds of young patients with essential hypertension of short duration and suggested that monotherapy with captopril would be most effective and physiologic in this subgroup of patients [5,6]. In that regard, measuring baseline ERPF, which is a standard process, could be a valuable clinical tool for more physiologic antihypertensive treatment.

566

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