Sublingual Captopril in Hypertensive Attacks in Patients on Hemodialysis

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Sir,

Over the last 3 years, various antihypertensive drugs have demonstrated their efficacy in the treatment of hypertensive crises. Nifedipine and captopril vie for the first place in speed of effect, when given sublingually, and in the limited number of side effects [1,2]. Sublingual prazosin has also been used effectively as a fast-acting antihypertensive [3].

Nifedipine has been tested in hypertensive patients with chronic renal failure (CRF) [4], and in hypertensive attacks that occur in the course of hemodialysis (HD) sessions [5].

We studied the effects of sublingual captopril on hypertensive attacks in 14 patients with CRF on HD. In 7 of these patients, the hypertensive crisis developed and was treated with sublingual captopril during the HD session (group I). In the other 7 the attack occurred in the inter-dialysis period (group II). Group I was formed by 4 males and 3 females with a mean age of 57.2 ± 8.4 years; 3 received antihypertensive medication, but never in relation to the HD sessions. The hypertensive crisis was accompanied by headache in 4 patients and appeared 153 ± 32 min (mean $\pm$ SD) after beginning dialysis. Group II included 3 males and 4 females with a mean age of 55.5 ± 8.6 years, 5 of whom presented headache during the hypertensive episode. Five patients regularly took antihypertensive medication. All patients were administered 25 mg sublingual captopril. The systolic (SBP) and diastolic (DBP) blood pressures were measured after 5, 15, 30, 45 and 60 min in patients of group I; in group II SBP and DBP were also measured after 120 min. Mean initial blood pressure before captopril administration, in two readings made after a 5-min interval, was $198.6 \pm 28.5/109.8 \pm 12.5$ mm Hg in group I and $192.8 \pm 13.8/113.4 \pm 12.1$ mm Hg in group II. All blood pressure measurements were made with the patient su-

Table I. Sublingual captopril in hypertensive crisis in hemodialysis patients

Time, min	Group I	Group II
SBP DBP	SBP DBP	
0	198.6 ± 28.5 109.8 ± 12.5	192.8 ± 13.8 113.4 ± 12.1
5	187 ± 21.3 96.4 ± 12.4	182.1 ± 16.8 104.2 ± 12.7
15	172.8 ± 24.9 $89.2 \pm 12.3^*$	182.1 ± 14.6 101.4 ± 13.4
30	$167.8 \pm 17.2^*$ $88.5 \pm 8.9^{**}$	$171.4 \pm 17.7^*$ 100 ± 11.5

45	152.8 ± 22.1**	87.1 ± 7.5**	170 ± 16.2*	98.7 ± 11.1
60	147.8 ± 16.8**	86.4 ± 6.26**	170.7 ± 18.5*	100 ± 12.9
120	- -	165 ± 27.3*	97.5 ± 16	

*p < 0.05; **p < 0.01.

pine. The Student t test for paired variables was used for statistical analysis. Table I shows the decline in blood pressure produced in both groups after captopril administration. In group I, the fall in SBP was significant after 30 min (p < 0.05) and maximal at 45 min (p < 0.01); DBP showed a significant reduction after 15 min (p < 0.05) and a maximal one after 30 min (p < 0.01). In group II, the decline in SBP was appreciable after 30 min (p < 0.05) and continued up to 120 min; the decline in DBP was not statistically significant. Only 1 patient of group I presented side effects, consisting in vomiting 1 h after drug administration.

The arterial hypertension of CRF patients on HD is compounded by volume overload, an important factor that contributes to the elevated frequency of hypertensive crises. Moreover, HD can produce an abrupt elevation of blood pressure in some patients as a result of rapid volume depletion by dialysis. A report has been made of a favorable course, with no side effects, of hypertensive crises during HD using oral and sublingual nifedipine [5].

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Martinez-Amenos, A.; Carratlà, J.; Pinto, X.; Santaló, M.; Tam-ayo, C.; Pujol, M.: Crisis hipertensivas: estudio comparativo de captopril sublingual y nifedipina sublingual. *Medna clín.* 89: 59–61 (1987).

Jabary, N.S.; Perez-Diaz, V.; Rodriguez Martin, C; Busta-mante, J.; Prazosin sublingual en la hipertension severa. *Nefro-logia* 7:102(1987).

Moreira, J.; Barata, J.D.; Ollas, J.: Antihypertensive action of calcium blockade in hypertensive patients with chronic renal disease. *Nephron* 47:314–319 (1985).

Nieto, M.; Riambau, E.; Roma, J.; Simon, R.: Crisis hipertensivas en hemodialisis tratadas con nifedipina. *Medna clín.* 77:697 (1987).

Tschollar, W.T.; Belz, G.G.: Sublingual captopril in hypertensive crisis. *Lancet* i: 34–35 (1985).

Hauger-Kleve, J.H.: Captopril in hypertensive crisis. *Lancet* ii: 732–733 (1985).

In our study, we demonstrate the effectiveness of capto- 2pril in patients on HD, although the most rapid effect was observed in the group that received captopril during the HD session. 3

In patients without renal failure, most studies [1, 6, 7] find a significant hypotensive effect 5–30 min after drug administration. However, in another study [2] the maxi- 4 mum decline obtained with sublingual administration occurred after 120 min. In our two groups of CRF patients 5 on HD, the concurrent factors mentioned above could be responsible for the difference in the intensity and speed of the effect of this drug, but sublingual captopril can 6 unquestionably be considered useful for the treatment of hypertensive crises during HD.