Serum Potassium Concentrations in Older Hypertensive Patients Receiving Enalapril

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The angiotensin converting enzyme inhibitors (ACEI) represent an important advance in the treatment of mild to moderate hypertension. The use of enalapril, the long-acting ACEI with once-a-day dosing, in the geriatric population has been limited, however. Hyperkalemia secondary to enalapril is a potential concern, especially in the presence of renal impairment or potassium supplementation, both of which may occur in the older hypertensive patient.[1]

The purpose of the study reported here was to determine the effect of enalapril on serum potassium concentrations in older hypertensive patients receiving hydrochlorothiazide with either potassium supplementation or a potassium-sparing diuretic.

METHODS

A computer listing of the hypertensive patients who attended a family medicine clinic during the period from September of 1986 through March of 1987 was obtained. Charts were selected for review if the following audit criteria were met: (1) the patient was over 60 years of age, (2) the patient was receiving combination therapy with enalapril and hydrochlorothiazide and either potassium supplementation or a potassium-sparing diuretic, (3) the patient was not receiving other drug therapy that might alter serum potassium concentrations, and (4) at least two potassium concentrations had been determined both before and following a minimum of one month of enalapril therapy.

The following data were collected: patient age, sex, and weight; enalapril dosage and duration; hydrochlorothiazide dosage and duration; method of potassium supplementation; and serum potassium and creatinine concentrations before and during enalapril therapy. Serum potassium concentrations were compared using the two-tailed *t* test for paired observations.

RESULTS

A total of 23 charts met the audit criteria. The mean (± standard deviation) patient age and weight were 68.0 (±5.9) years and 63.2 (±9.8) kg, respectively, with 11 male and 12 female patients included in the analysis. Serum potassium concentrations increased by a mean of 0.35, 0.73, 0.35, and 0.33 mEq/L in patients receiving 25 mg of hydrochlorothiazide and 50 mg of triamterene (70 percent bioavailability), 50 mg of hydrochlorothiazide and 75 mg of triamterene (100 percent bioavailability), 50 mg of hydrochlorothiazide and 5 mg of amiloride, and potassium chloride, respectively. Only one patient's serum potassium concentrations increased into the hyperkalemic range.

COMMENT

The development of hyperkalemia secondary to ACEI therapy is an important concern. Burnakis and Mioduch[2] have reported five patients (mean age, 67.8 years) in whom the serum potassium concentrations increased from 3.88 ± 0.41 to 4.84 ± 0.45 mEq/L when captopril was added to a potassium-sparing diuretic or potassium supplement. In a retrospective study of 20 patients by Schuna et al,[3] however, the addition of captopril did not result in a significant increase in serum potassium concentrations.

In the present study of 23 patients, serum potassium concentrations were not significantly increased by the addition of enalapril. In the five patients with reduced cre-

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atinine clearances, however, serum potassium concentrations did increase to a greater degree. Until further studies in the elderly are completed, hyperkalemia remains a significant concern, and serum potassium concentrations should be monitored carefully when enalapril is added to an antihypertensive regimen that includes either a potassium-sparing diuretic or a potassium supplement.

References

1. Vasotec package insert. West Point, Pa, Merck, Sharpe & Dohme Laboratories, December 1985
2. Burnakis TG, Mioduch HJ: Combined therapy with captopril and potassium supplementation. Arch Intern Med 1984; 144:2371–2372
3. Schuna AA, Schmidt GR, Pitterle ME: Serum potassium concentrations after initiation of captopril therapy. Clin Pharm 1986; 5: 920–923