Interaction of Biofeedback-Assisted Relaxation and Diuretic in Treatment of Essential Hypertension

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Thirty patients with essential hypertension participated in a study designed to compare two treatments: diuretic medication alone (n = 10) and biofeedback assisted relaxation combined with diuretic (n = 20). One of 10 patients lowered BP with diuretic alone and 11 of 20 patients lowered BP with diuretic combined with biofeedback-assisted relaxation. The addition of the behavioral intervention to the diuretic therapy produced a decrease in blood pressure beyond that associated with the diuretic alone. The decreases in BP mediated by diuretic were related to high entry levels of BP, low anxiety, forehead muscle tension, anger expression and plasma renin activity. The BP decrease mediated by combined diuretic and biofeedback-assisted relaxation was associated with high pretreatment BP, anger controlled, low finger temperature and high/normal plasma renin activity.

Descriptor Key Words: essential hypertension; relaxation; diuretic; biofeedback; blood pressure.

INTRODUCTION

Essential hypertension, a problem with a complex etiology and multiple underlying mechanisms, has been treated with both pharmacotherapy and behavioral methods. The Joint National Committee (1988) recommended

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using nonpharmacological treatments in conjunction with all levels of pharmacotherapy in essential hypertensives. In a recent monograph, Laragh (1988) stated that good control of blood pressure (BP) in hypertensive individuals must be achieved with the least amount of medication. Recently, as increasing emphasis has been placed on maintenance of quality of life of persons undergoing pharmacological treatment (Croog et al., 1986), interest in the adjunctive effects of nonpharmacological treatments has grown. Studies have been designed, therefore, to pursue the question of the interaction of pharmacological and nonpharmacological techniques as a means of BP control in persons with essential hypertension.

Goldstein, Shapiro, Thananopavaran, and Sambhi (1982) found that though drug treatment was superior to all behavioral treatments in lowering systolic BP, diastolic BP as measured in the laboratory was equally decreased by drugs and biofeedback. Hatch, Klatt, and Supik (1985) studied 52 medicated hypertensives, some of whom received adjunctive relaxation techniques. Larger decreases in medication usage were observed in the patients trained in relaxation techniques than in those patients who continued to take medication alone. Patients were on various types of medication, which were adjusted by patients' personal physicians during the study, thereby making analysis of the BP response to relaxation difficult.

Jacob et al. (1986) compared the effects of relaxation training in patients given placebo, diuretic, or beta-blocker. The acute effects of relaxation were greater in the groups given diuretic than in the groups given placebo or beta-blocker. Blanchard et al. (1986) conducted a study of hypertensive patients maintained on various diuretics after second stage medication was withdrawn. Half of the patients were treated with progressive relaxation and the other half with thermal biofeedback, with larger BP decreases observed in the thermal biofeedback group.

The current study deals with a trial of biofeedback-assisted relaxation as an adjuvant to diuretic treatment in 30 patients with essential hypertension. Our objectives were to determine (1) whether biofeedback-assisted relaxation added to diuretic produces a greater decrease in BP than diuretic alone; (2) if pretreatment psychophysiological characteristics can differentiate (a) between responders and nonresponders to diuretic, and (b) between responders and nonresponders to combined biofeedback-assisted relaxation and diuretic treatment.

**METHOD**

Table I shows the characteristics of the research sample, including those who subsequently completed all phases and those that did not complete the entire protocol. One hundred and one hypertensive patients from