CAPTOPRIL TEST IN ELDERLY HYPERTENSIVE PATIENTS FOR DIAGNOSIS OF RENAL ARTERY STENOSIS

Thesis
Submitted for Partial Fulfilment of
M.S. Degree in
General Medicine

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1994

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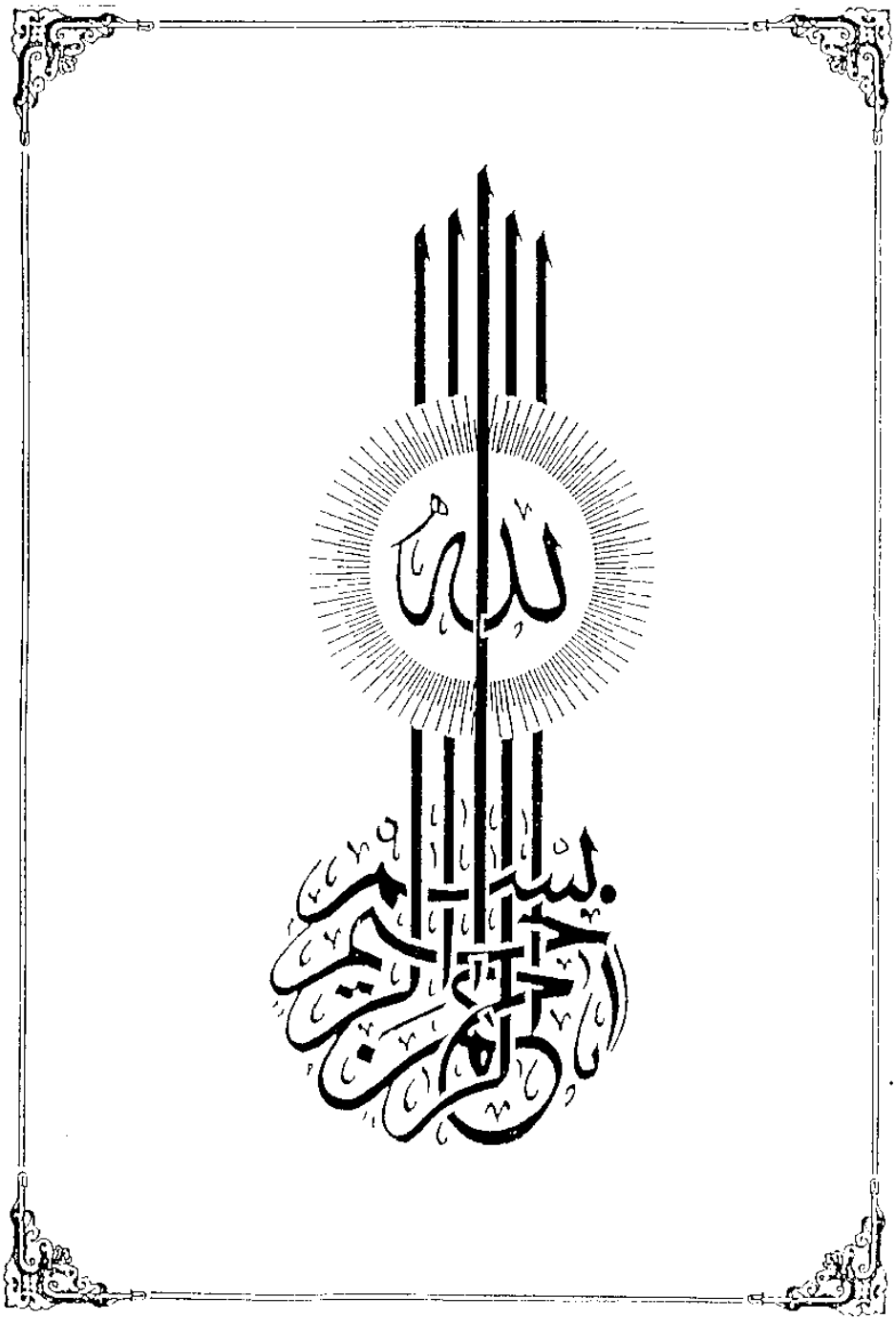

ACKNOWLEDGEMENT

I would like to express my sincere thanks and deepest gratitude to **Prof. Dr. Badawy Labib,** Professor of Internal Medicine, Ain Shams University for the guidance, encouragement and generous cooperation.

I am deeply grateful to **Dr. Alaa Abdel-Rahman,** Ass. Professor of Internal Medicine, Ain Shams University who offered much of his time and experience for providing me with valuable advices, support, suggestions and guidance throughout this study.

My deep gratitude to **Dr. Ola El-Demerdash,** Lectruer of Clinical Pathology, Ain Shams University, for her efforts and accuracy in the practical part of this work that participate in its success.

Dr. Rafik Bushra Abdel-Messih Hanna

Introduction and Aim of the Work

Renovascular disease in elderly hypertensive patients is not uncommon. A recent study indicated a prevalence of 9.8% among hypertensive patients above 50 years of age. (Blakeman N, 1988).

On the basis of clinical characteristics alone, patients with renovascular disease can not be distinguished from those with other forms of hypertension. (Simon N, 1972).

Renovascular disease is often one of curable forms of hypertension. (Pickering TG, 1983).

Moreover, medical treatment of hypertension in such patients may in some instances leads to irreversible loss of renal function. (Postma CT, 1987).

So there are good reasons to try to identify patients with renovascular disease as early recovery of renal artery stenosis (R.A.S.) protects the patient from long term serious

REVIEW OF LITERATURE

CHAPTER 1

HYPERTENSION IN ELDERLY

Hypertension in the elderly is dangerous wheather it is predominantly systolic or diastolic, labile or fixed and in either sex. Any severity or type of hypertension in the elderly is associated with a higher absolute risk of major cardiovascular sequelae than in the young. (Kagan, Ano & Mc Gee, 1981).

We have to know that the main cause of death in both men and women older than 50 years is cardiac disease, and because of this, hypertension is considered as a significant risk factor and it has become a major health problem for the elderly (Ramsay & Tucker 1983).

So, there is no justification for neglecting hypertension in the elderly, as hypertension is the chief remediable precursor for cardiovascular morbidity and mortality that can be effectively modified by the prevention oriented

physician to control disabling cardiovascular disease in the elderly (Kannel & McGee 1979). The increased life expectancy is due to improved detection, treatment and control of blood pressure, which has contributed to lower cardiovascular mortality in elderly.

The increased risk of cardiovascular disease in relation to elevated diastolic blood pessure in the elderly is well documented; recent findings show increased risk associated with systolic hypertension as well (Gifford, 1982).

Causes of hypertension in elderly:

The elderly hypertensive patient frequently has an elevated peripheral vascular resistance, low cardiac output, normal or low intravascular volume and low plasma renin activity. (Massie BM, 1987).

One proposed mechanism for hypertension in this physiological state is as follow: when an individual becomes volume expanded, possibly secondary to a loss of tubular efficiency, an unknown compound is hypothesized to occur

that impairs the retension of sodium and thus normalizes plasma volume. This hormone, which may be hypothalamic in origin, promotes sodium/calcium exchange. This results in increased intracellular calcium and smooth muscle vasoconstriction (Busse JC, 1988). Thus the increased peripheral resistance is the primary mediator of the elevation of blood pressure.

Secondary causes of hypertension such as pheo-chromocytoma or conn's syndrome tend to be some what less frequent than in younger populations, renovascular disease secondary to arteriosclerosis is more common and may account for 5 to 10 percent of patients. (Busse JC, 1988).

Epidemiologic data:

Epidemiologic data show that elevation of systolic blood pressure alone as well as diastolic elevations are associated with increased morbidity and mortality in elderly hypertensive patients. (The Working Group on Hypertension in the Elderly, 1986).

High blood pressure is the major factor underlying the 500,000 strokes and the 175,000 deaths from strokes that occur annually and is a contributing factor in the 1500,000 heart attacks and 567,000 heart attack deaths each year. (Kannel WB, 1984).

Hypertension not only increases the risk of heart attack and stroke but also a risk factor for congestive heart failure, chronic occlusive peripheral vascular disease, aortic aneurysms and renal failure. (Kannel WB, 1984).

Although common, isolated systolic hypertension in elderly persons shouldn't be considered normal, since it usually reflects a disease process resulting in loss of elasticity of the aorta and its large branches.

Prevalence of hypertension in elderly:

Estimation of the prevalence of hypertension, including both diastolic and isolated systolic elevations, in the elderly population of the United States vary depending on which blood pressure threshold are used to define the disorder.

For example, the prevalence was estimated to be approximately 44% in whites aged 65 to 74 years and 60% in blacks when the 1976 to 1980 National health & Nutritional examination survey defined hypertension as the average of three blood pressure measurements greater than or equal to 160/95 mmHg taken on a single occasion or self reported taking of anti-hypertensive medication (Drized T, 1986).

Prevalence estimates were considerably higher 63% for whites and 76% for blacks when 140 mmHg systolic and 90 mmHg diastolic were used as defining threshold (Hypertension, 1985).

At the state level, a 1982 probability survey of connecticut households produced similarly high rates using the 140/90 mmHg cut point or the criterion of self reported taking of antihypertensive medication for persons aged 50 years and over the prevalence rates of hypertension was as follow :

White men 49.5%; black men 67.6%; white women

52.3% and black women 80% (Freeman DH Jr, 1985).

Data from a number of studies and one National probability survey have been used to estimate the prevalence of isolated systolic hypertension. In Chicago stroke study (N = 2772), 7.3% of persons aged 65 to 74 years exhibited systolic pressure greater than or equal to 160 mmHg and diastolic pressure less than 80 mmHg. (Shekelle RB, 1974).

The Hypertension detection and follow up program (HDFP) found that 6.8% of 158 906 persons aged 60 to 69 years had isolated systolic elevation ≥ 160 mmHg with normal diastolic pressure < 90 mmHg. (Curb JD, 1985).

Dr. Michael L. Tuck from the veterans administration center in sepulvida, california suggested that there are really two generation of geriateric patients, the young old, aged perhaps 60-79 years and the old - old genatrics of 79 years or more. Most of the previous informations about hypertension come from the first group, and rarely we know rather little about the second. (Tuck, 1987).

disease than is found in younger patients. Degenerative joint disease is extremely common. Its treatment with non-steroidal agent is a potential source of major drug interactions for those on anti-hypertensives. Drug-drug interaction may occur at any age, but drug-disease interactions are a particular hazard for older people (Giffored, 1982). Moreover some of the drugs used to treat hypertension carry with them risks that perhaps exceed their potential benefits. For exmaple, it has been pointed out that in some situation death rates might perhaps be higher in elderly patients who receive diuretics. (Reisin & Frohlic, 1983).

So, the ideal drug for elderly hypertensives would be one which had a specific action, a low side effect profile and good compliance. One which is capable of halting the process of atherosclerosis, which is low in cost, improves the patient's quality of life and which does not interact with other risk factors (Tuck, 1987).

Therefore, dietary measures (Sodium & Caloric

restriction) should be tried first as an alternative to drugs therapy for elderly patients. But if a non pharmacologic approach is unsuccessful in achieving control, drug therapy may be initiated (The Working Group on Hypertension in The Elderly, , 1986).

Therefore, a stepped-care regimen should be employed, but initial doses of drugs should be lower, possibly no more than half the recommended dose, and the increments more gradual than for younger patients.

In particular, marked orthostatic changes in blood pressure should be avoided if possible, and, except when the pressure is alarmingly high or when it seems to be causing dangerous symptoms, simultaneous introduction of two or more drugs is contraindicated because of the increased sensitivity of some elderly patients for all hypertensive agents. In general, the recommendation for the pharmacologic treatment of isolated systolic hypertension and of diastolic hypertension are similar. (The Working Group on Hypertension in the Elderly, 1986).

The step 1 drug of choice is usually a diuretic, because this class of agents is effective and the elderly are considered to be relatively resistant to monotherapy with β-blocking agents. (Brühler FR, 1984).

However, because the elderly may be unusually susceptible to the hypokalaemic effect of oral diuretics, the serum potassium level should be monitored closely, especially during the first few months of therapy. A step 2 drug, such as a β-blocker, methyldopa, or clonidine, may be added to the regimen if the diuretic alone does not control the pressure adequately.

Hydralazine may be added as a step 3 drug if necessary and can sometimes be used as a step 2 drug, since it seldom causes reflex tachycardia in elderly patients because of their sluggish baroreflex activity. A few agents, such as those producing severe orthostatic hypotension (e.g. guanethidine, prazosin and guanadrel) should be avoided if at all possible. (Ostrom JS, 1985).