

# Hypertension

## - current aspects

by Prof YK Seedat

MD, FRCP, (London) FCP (SA)

Professor Seedat is Head of the Department of Medicine, University of Natal Durban.

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**H**ypertension is a major disease in the urban black. The prevalence in the urban black in Durban is 25%, that is one in four adult blacks<sup>1</sup>. This is slightly less than the prevalence in the American Negro which is 27%<sup>2</sup>. The prevalence of hypertension in the American Negro is the highest in the world.

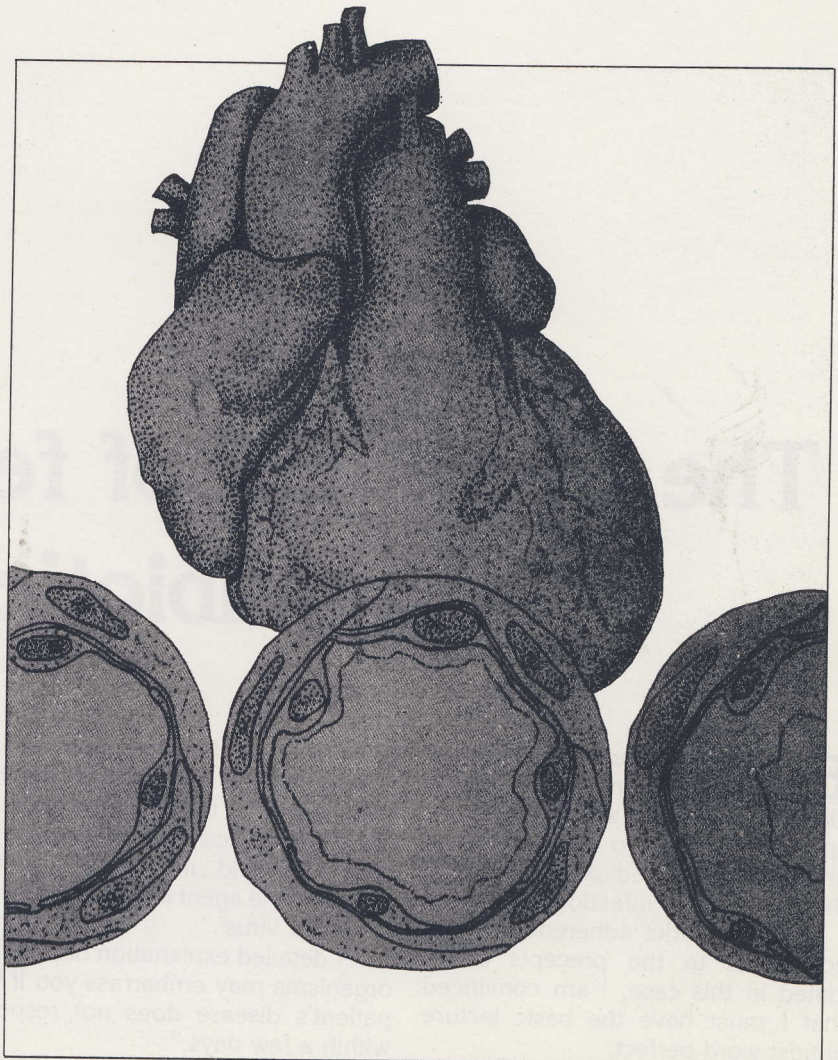
In South Africa hypertension in the black population is not well managed as regards treatment. This is because they have either not been diagnosed or that diagnosed patients have not complied with hypertension treatment.

Epidemiological studies showed that:- 90% of urban Zulus had hypertension which was undiagnosed, undetected or inadequately treated<sup>1</sup>. 58% of Indian hypertensive subjects were untreated or had discontinued therapy<sup>3</sup> and 77% of White subjects had hypertension which was untreated or had discontinued therapy<sup>4</sup>.

It is possible that close bondage and the ability to see a doctor regularly produced better care in the Indian hypertensive patient.

In the light of the above, it is desirable to have more effective screening programmes for the detection of hypertension in all racial groups. One of the causes of inadequate therapy is inadequate information concerning possible complications from hypertension or lack of motivation from both doctors and patients in the treatment of hypertension.

Treatment may be inadequate



because of subtherapeutic dosage, inappropriate medication or inadequate therapy due to side effects which may cause the patient to stop treatment. Among the black population of South Africa it is likely that only 10% of hypertensive patients are adequately treated. Thus the gap which exists between the availability of effective drugs and effective treatment is immense.

The responsibility for correcting this anomaly falls partially on the medical profession, in particular the

Primary Care physician, or General Practitioner.

The effects on the health care system in terms of adequate treatment of hypertension is a major problem in South Africa. The two important aspects are:- society at large and the individual per se. When one treats hypertension one has to look at both problems separately.

The cost of treatment to the individual is related to the medical and

drug cost and indirectly to the patient having to lose days off work or who becomes ill due to therapy complications.

The aspect in relation to the societies at large are diseases which compete in terms of priority. In the black population malnutrition and infectious diseases like tuberculosis and parasitism are rampant. Priority should thus be given to these diseases rather than hypertension in a rural background. There is little point in treating hypertension in an adult who is malnourished or suffering from tuberculosis since the complications from hypertension (for example cerebrovascular episode, congestive cardiac failure or renal failure) may only appear in five to ten years. Thus when one studies a disease one must define one's priorities in relation to a disease.

The hidden epidemiological problems in hypertension must be considered. There are the side effects and cost of drugs in relation to the benefits of therapy like the prevention of 'strokes', ischaemic heart disease, renal failure and improved health. One must bear in mind that no treatment produces little benefit.

I attended a symposium on "Arterial hypertension in Africa" in Milan, Italy (3-4 June 1981). At this meeting numerous speakers from Africa commented that their countries could not afford to treat hypertensives with basic drugs such as thiazide diuretics, and a discussion on developing herbal medicines for treating hypertension ensued!

One must include the role of the economist in the treatment of hypertension. The cost/benefit ratio of treating hypertension within the health care delivery system has to be determined.

There is no fixed criteria in defining hypertension. A normal blood pressure level for one person may be abnormal for another. Thus one has to judge patients individually in relation to other parameters when one assesses the treatment of hypertension. We know from insurance statistics that untreated hypertension can produce complications at certain levels of blood pressure.

It is necessary to understand the action of the drugs used in treating hypertension. They are four types of action:-

- Removal of water and electrolytes (eg diuretics). They also deplete the media of sodium and thus have a vasodilator effect.

- Interference with efferent sympathetic systems, both the alpha and beta adrenoceptors (eg, alpha methyl dopa, clonidine and rauwolfia).

- Vasodilators (eg hydralazine, prazosin and minoxidil).

- Drugs which act on the renin-angiotensin system, eg. captopril.

"Captopril and its analogues will probably be the drugs of importance in the eighties as beta blockers were in the late sixties and seventies. There are nearly thirty captopril analogues in the experimental stage.

Black hypertensive patients respond better to diuretics than other racial groups. The reason for this is not known. It may be related to an increase of sodium in the diet or that they cannot handle sodium in their body.

The concept of salt causing hypertension is an attractive one. Before the turn of this century blacks took little salt with their food. It may be that their physiological system has not adapted to the increasing intake of salt and consequently cannot excrete the sodium through the kidneys. This appears to be an attractive theory.

In double-blind, placebo-controlled, cross-over trial of 24 black patients with hypertension, the efficacy of atenolol 100 mg once daily was compared with chlorthalidone 25 mg once daily. The two drugs were also given combined at these doses and the effects compared with those of the drugs given alone. Atenolol as sole treatment had no appreciable effect on blood pressure as compared with placebo. Chlorthalidone produced a small decrease but this was not statistically significant. A combination of the two drugs, however, produced a significant reduction in blood pressure (mean lying blood pressure  $p < 0,001$ ; mean standing blood pressure  $p < 0,0002$ ). These findings suggest that beta-blockers should not be regarded as baseline treatment of hypertension in blacks<sup>5</sup>. Other studies have documented that beta blockers should not be the baseline drug in the treatment of hypertension in the blacks<sup>6-13</sup>

Laragh et al.<sup>14</sup> suggested that

beta-blockers produced a better hypotensive effect when the plasma renin levels were raised. I could not find a correlation between plasma renin levels and decrease in blood pressure with beta-blockers. Until we know how beta-blockers act in hypertension the reason as to why beta-blockers do not produce an adequate hypotensive response will remain an enigma.

### Treatment of hypertension among black patients.

The benefits of treating mild hypertension (diastolic blood pressure between 90-105 mm.Hg) in preventing complications needs to be determined. At present the Medical Research Council of the United Kingdom is undertaking this research programme at a cost of millions of pounds. In our epidemiological studies about three percent of the Black, Indian and White population had a diastolic blood pressure equal to or greater than 105 mm. Hg. Perhaps we should concentrate our efforts in treating this group as a number of about 500,000 hypertensive patients requiring treatment as a much more realistic figure than the four million hypertensive patients in South Africa.

In the treatment of mild hypertension the following factors should influence the clinician to treat the patient viz:

- Males in relation to females.
- Age – the younger the patient the worse the prognosis.
- Smoking cigarettes – this may be vasculotoxic.
- Hypercholesterolaemia.
- Family history of hypertension and its complications.
- Diabetes Mellitus.
- Target organ damage from hypertension for example evidence of fundal, cardiac or renal involvement.
- Elevation of systolic blood pressure in which has been found by the Framingham study to produce complications.<sup>15</sup>

In the absence of such factors it is advisable to resort to measures like weight reduction, stop smoking, decrease salt intake and reduce stress factors.

The Joint National Committee on Detection, Evaluation and Treatment

## Hypertension

of High Blood Pressure<sup>16</sup> recommended that for Step 1 - the base line in the treatment should be a thiazide diuretic. If the desired drop in blood pressure is not obtained, in Step 2 one could add propranolol or methyldopa or reserpine in combination with a thiazide diuretic. For Step 3 hydralazine could be combined with a beta blocker and a thiazide diuretic. Finally for the desired drop in blood pressure in Step 4 guanethidine or one of its analogues could be combined with a thiazide diuretic and either reserpine or methyldopa.

The above mentioned step care treatment is the conventional treatment for Caucasians and Indians (Fig 1). Clonidine hydrochloride and prazosin hydrochloride could be added or substituted for Step 2 or Step 3 drugs.

The level of a diastolic blood pressure does not create a medical emergency. If a patient has for example a diastolic blood pressure of 160 mm. Hg. and is asymptomatic one should not lower the blood pressure rapidly with parenteral hypotensive agents as there have been cases of cerebrovascular episode, coronary thrombosis or blindness following such a procedure. It is preferable to lower the blood pressure slowly with methyldopa 0,5 Gm BD or labetalol 400 mg. tid orally. The indication for parenteral hypotensive agents is when a patient has complications from hypertension for example hypertensive encephalopathy, acute pulmonary oedema, or epistaxis.

I feel that the step care treatment for hypertension in blacks should be based on a cost effective basis (Fig 2). Step 1 should consist of a thiazide diuretic. Step 2 is to add reserpine to a thiazide diuretic. Nasal congestion and depression from reserpine are uncommon in black patients. The majority of black patients suffering from mild and moderate hypertension could be effectively controlled with reserpine and a thiazide diuretic. Step 3 is to combine methyldopa with a thiazide diuretic. Reserpine and methyldopa should not be combined because the central nervous system effects of drowsiness and depression are enhanced. Step 4 should consist of beta blockers combined with hydralazine and thiazide

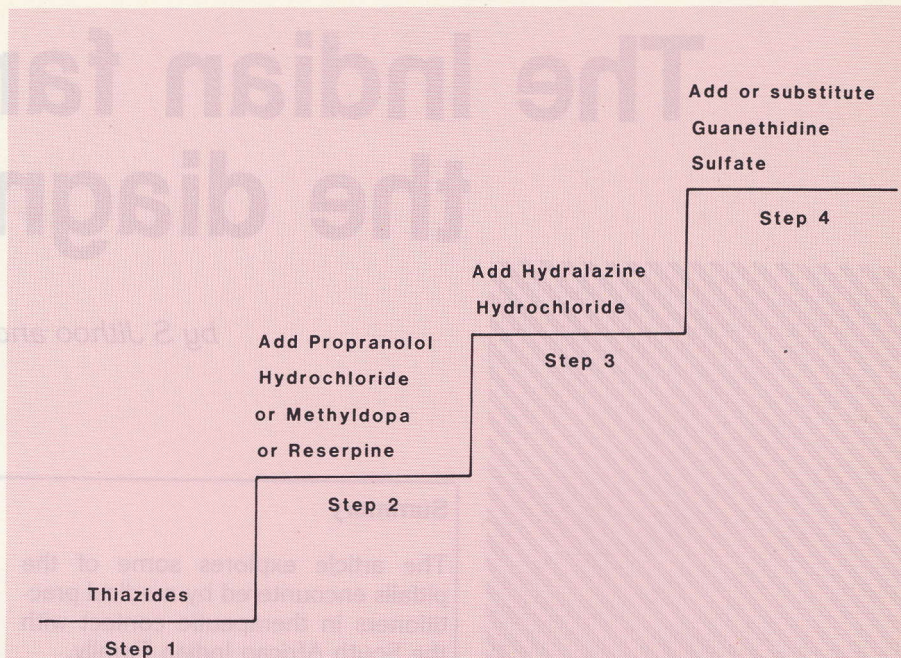


Fig 1 Step-care treatment of hypertension in Caucasians

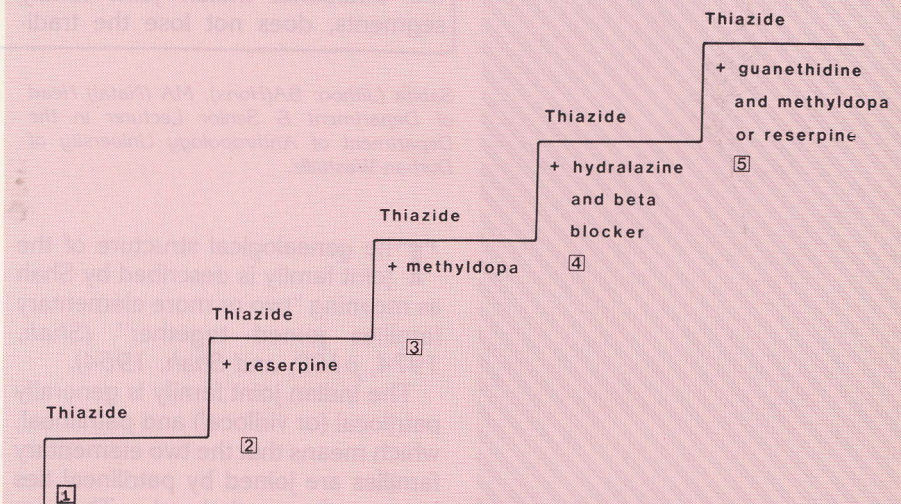


Fig 2 Step-care treatment of hypertension in Blacks

diuretic. Because beta blockers alone are ineffective in hypertension they should be routinely combined with a thiazide diuretic.

Hydralazine is an interesting drug. It was introduced as a hypotensive agent in 1952, soon after the advent of reserpine in Western medicine in 1950. The lupus diathesis phenomenon from hydralazine led to doctors becoming unwilling to use it. However the advent of beta blockers with its bradycardia effect encouraged the use of hydralazine to counteract this effect.

Hydralazine should not be given in a dosage above 200 mg. daily. No case of systemic lupus erythematosus from hydralazine has

been described on this dosage.

Prazosin could be substituted for hydralazine but the cost of prazosin is at least twice that of hydralazine in equivalent effective doses.

Step 5-Guanethidine is combined with a thiazide diuretic and methyldopa or reserpine. There is a small group (one to two percent) of black patients suffering from refractory hypertension who do not respond to any of the above mentioned drugs. In such cases minoxidil and/or captopril (Capoten) are used.

Most patients suffering from hypertension are effectively controlled with the available drugs and there

to page 13