

A COMPARATIVE STUDY OF EFFECTS OF DIFFERENT DRUG REGIMENS IN THE TREATMENT OF HYPERTENSION

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SUMMARY

Several comparative studies have been conducted throughout the world regarding the management of hypertension with different regimens, but steady control of it has not been achieved, steady control is a must to prevent strokes, Myocardial Infarction Retinopathy, Nephropathy and other complications.

Therefore a study was conducted on patients attending the Red Crescent cardiac Hospital and C.C.U. Latifabad No. 2 Hyderabad.

PATIENTS AND METHODS

This study was carried out in the Cardiovascular Institute Latifabad from May 2001 to December 2001 during this period 150 cases were examined/evaluated. The patients selected were both males & females and suffering from mild, to moderate severe Hypertension.

A written consent was taken and questionnaire was filled by doctor on duty.

Questionnaire:-

Age _____
Sex: Male / Female _____
Weight _____
Smoker _____ 10cig 20cig 30cig
Family History of _____
1. Hypertension
2. Diabetes

Previous History of Angina

3. CCF
4. Stroke
5. Asthma

B.P. _____

Respiratory Rate _____

Tachy cardia _____

Any Stress.

Investigations

1. Blood Urea
2. Serum Creatinine
3. Blood Sugar
4. Serum Lipids (Lipid Profile)
5. Urine Albumin
Sugar
6. Serum Electrolytes
7. X-ray Chest
8. E.C.G.

A comparison of 3 groups of anti hypertensive drugs was done after the patient had taken the drugs for the period of 4 weeks and were looked for

- i. Effective reduction of blood pressure
- ii. Patients having adverse effects
- iii. Progression or regression of disease

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Group A	Calcium channel blockers
Group B	β Blocking drugs
Group C	ACE inhibitors

INTRODUCTION

Hypertension is the most common cardiovascular disorder affecting mainly the male earning members and thus causing economic burden to the family & the nation as a whole. If effective control is managed then the well being of the whole family could be improved and reduction in the mortality rate could be achieved. Hypertension is found to affect 20% of the adult population in U.S.A. where as no reliable data regarding the prevalence of this disorder in Pakistan is available and according to WHO (Alivan 1996) 20-26% of the adult population could be having HBP & 70% of these may not be even aware of the disease.

In Pakistan circulatory diseases cause 100,000 deaths / year i.e. 12% of all death annually (FBS 1995) & a positive correlation between high Blood Pressure & cardiovascular risk has long been recognized (Flack et al 1995). Hypertension is now considered to be the commonest ailment in all ages, in both sexes & in all regions of Pakistan (Syed et al 1973).

In 1997 JNCV Joint National Committee suggested that change in life style, which includes weight reduction and moderation of salt, & fat intake, moderate exercise & stoppage of smoking are the non-pharmacological measures, if un successful or non compliance is the reason then the Pharmacological pathway is to be adopted.

OBJECTIVE

HBP is a heterogeneous disorder & other risk factors modify its course & morbid cardiovascular events occur 20 times more commonly because of the presence of these factors. Hypertension if left untreated then the chances for developing cardiomegaly, CCG, retinopathy & C.V.A and renal insufficiency are very pronounced & it is a progressive disease even in the mild form & is lethal if untreated.

IMPORTANCE OF WORK

Different parameters have been set up in this work as

regards correlation of the age, sex, Obesity, D.M. Familial tendency & other factors, the efficacy of the three (3) different groups of drugs and their response in different patients of mild, moderate & severe hypertension was assessed.

In this way a large number of patients were thoroughly analyzed and any progression towards end organ damage identified, those were isolated out and referred for the specialized type of treatment required.

It is further recommended that emphasis is to be made for the life time treatment and frequent review for risk factors and comprehensive preventive programmes be initiated.

METHODOLOGY & EXPERIMENTAL DESIGNS.

Patients of both sexes were selected and divided in to 3 groups according to the drug prescribed.

Group A	Group B	Group C
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In all the groups there were 50 patients & these were further divided into 3 sub groups according to the degree of blood pressure

1. Mild hypertension 140-159 mm Hg systolic, 90-99 mm Hg diastolic
2. Moderate hypertension 160-179 mm Hg systolic, 100-109mm Hg Diastolic
3. Severe hypertension 140-209 mm Hg systolic, 110-19mm Hg Diastolic

WHO/ISH (1999)

The BP was recorded in the sitting position and then the patients were sent for Preliminary investigations and the prescribed proforma was filled in. The compliance of the drugs was ensured and patients were asked to attend the OPD weekly and the effect of the drug was evaluated.

The end organ damage was identified from the following cardiovascular damage.

I Cardiac Failure by ECG or Echocardiography

- Coronary artery disease
 - Angina Pectoris
 - Acute MI
- i. Shortness of breath (SOB)
 - ii. Gallop
 - iii. Bilateral basal crepitations

Supported by X-ray chest
Echocardiography]

II Nephropathy

Edema feet and albuminuria and a rise in serum creatinine and urea level from the previous one.

III Retinopathy

Blurring of Vision and confirmed by Ophthalmologist

IV Vascular

- Embolic episodes
- Haemorrhage

I, Transient Ischaemic Attacks (TIA)

Side effect profile

1. Cough
2. Lethargy
3. Ankle Oedema
4. Vertigo
5. Constipation

Metabolic profile

- Effect on lipids
- Serum Uric Acid
- Blood Sugar

RESULT

Our study included 150 patients. In the study there were 95 (63.3%) males and 55 (36.7%) females.

Their age ranged from, among the males 24-73 years and for females 28-77 years, with the highest incidence 38 patients (25.3%) in the 5th decade of life (See Table I)

History of previous treatment was present in 97 (64.7%) patients where as 53 (35.3%) were newly diagnosed hypertensives.

Table-I

Agewise Distribution of Patients		
Age in years	No. of Patients	Percentage %
20-30	11	7.3%
31-40	27	18.0%
41-50	38	25.4%
51-60	29	19.3%
61-70	27	18.0%
71-80	18	12.0%
Total	150	100.0%

34% Patients had mild hypertension, 48% patients had moderate hypertension and 18% patients had severe hypertension. In group A, 50 patients received calcium channel blocking drugs. 32 patients showed very good response to these drugs after a period of 04 weeks of therapy. The following adverse effect were noted.

Ankle Oedema	19	patients]	Nifedipine
Headache	07	patients]	
Constipation	06	patients]	Verapamil

The group B Patients received b Blockers effective control of blood pressure effective control of blood pressure was noted in 37 patients after a period of 04 weeks. Adverse effects due to B-Blocking drugs were analyzed and it was found that 30% patients complained of insomnia while 21% had complained of Fatigueness.

The group C patients receiving ACE inhibitors 39 patients showed comparatively better control of their hypertension. There was a trend of high efficacy in older age group.

Amount the adverse effect of the drugs used, the patients reported.

Dry cough	07 patients
Altered sense of taste	01 patients

Need for discontinuation of therapy due to adverse effect of the ACE inhibitors did not occur.

Table-II

Co-Relation of Risk Factors with Hypertension		
Risk Factor	No of Patients	Percentage %
Stress	120	80%
Genetic	60	40%
Predisposition		
Cigarette Smoking	52	34.66%
Hyperlipedemia	45	30.0%
Diabetes Mellitus m	18	12.0%
Obesity	15	10.0%

Table-III

Associated Conditions with Hypertension		
Risk Factor No.	of Patients	Percentage %
Angina pectoris	30	20%
Congestive Cardiac Failure	09	06%
Stroke	02	0.75%
Renal Impairment	24	16%

Table-IV

Anti-Hypertensive Efficacy		
	Mean reduction of SBP	Mean reduction of DBP
Group A Calcium Channel Blocking drugs	15 - 30	10 - 20
Group B β Blockers	15 - 30	10 - 20
Group C ACEI	15 - 40	10 - 25

DISCUSSION

Hypertension being a silent killer disease is also very prevalent in Pakistan. Our study showed that commonest risk factor was life stress seen in 80% of the cases. (Table-II). Pressor hyperactivity has very often been reported in stress (servier et al 1995) and mental stress increases heart rate and plasma catecholamines (Wallen et al 1997) and predisposes to HBP.

Genetic predisposition was seen in 70% cases. Adults with both hypertensive parents have a 50%-70% chance of developing hypertension.

Where as with normotensive parents the risk is only 4%-20% (Burt VL et al 1995). Cigarette smoking-hypertension Co-relationship was seen in 35% patients and it is claimed that smoking of each

cigarette increases 2-3 times the risk of stroke and CHD (MRC working party 1985).

History of Angina pectoris accompanying HBP was seen in 30% of middle-aged smokers. (Table-III) several epidemiological studies have shown that DBP>90m.mHg and additional risk factors of smoking, hypercholesterolemia and the genetic predisposition accounts for 30% of all stroke cases and 17% of all patients with IHD.

Hyperlipedemia and hypertension go hand in and it has been reported that lipid profile disorders affect 40%-85% of hypertensive patients, but this was not revealed in our study & elevated plasma cholesterol level were seen in 30% patients only. The reason probably being that most of our patients were of low socio-economic group, mostly laborers and performing vigorous exercise and consuming a diet low in saturated fats.

Group "A" patients receiving Calcium Channel blockers showed better efficacy in older age patients and in all mild, moderate, and severe degree of hypertension, Effective reduction of 15-30m.m Hg of SBP and 12-25m.mHg of DBP in all grades of hypertension was noted.. (Table-IV).

Ankle Oedema was reported in 35% of the cases not to a degree of discontinuation of therapy while 15% patients developed headache during therapy.

With group "B" patients receiving b-blockers, a general improvement in mental functioning and emotional state was seen as compared with other groups. Effective reduction of 15-30 m.m Hg of SBP and 10-20 m.m Hg of DBP was seen in mild and moderate cases of hypertension but not noted in severe hypertension.

The group "C" patients receiving ACE inhibitor had an effective reduction of 15-40 m.m Hg of SBP and 10-25 m.m Hg of DBP in all grades of hypertension. As an adverse effect 15% of the patients developed dry cough. In hypertensive patients with diabetes mellitus having albuminuria, these drugs caused an effective control of albuminuria.

It is estimated that in Asian countries, anti hypertensive Treatment can avert 10% of deths from

stroke and IHD (Stephen Mac Mahon 1990). A great reduction in morbidity and mortality could be achieved by creating awareness about the risk factors and benefits of drug compliance.

Nowadays, with the broadened spectrum of Pharmacological treatment, there should be effective control of hypertension, morbidity due to end organ damage, improvement in life style and well being of patients.

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