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Total of 53 patients were included in this present study, who were attending hypertension clinic, Diabetic clinic, cardiology clinic and wards run by Department of Medicine MLB Medical College Jhansi (U.P). Out of 53 patients 19 were kept in Calcium channel blocker group, 12 in alpha blocker group and remaining 22 in ACE inhibitor group.

In this present study, majority of patients were more than 40 yrs. Of age (43 out of 53). The increasing incidence of hypertension with age is well established. Cornani-huntey et al noted 5% increase for each 10 yr interval of age from base line, the high incidence in persons over 50 yrs of age is probably represent a considerable proportion of cases of isolated systolic hypertension. The number of male subjects were slightly higher in this study (32 versus 21). In the NHANES.II survey, in united states the percentage of males were always higher at all ages, hence it is evident that age and sex wise distribution seen in this group of 53 patients was similar to those observed in other studies.

In this present study it was observed that 43% patients were diagnosed having stage -II (Moderate hypertension) Again we had almost 32% of our patients in stage-III, stage-I hypertension was seen in only 24.5% patients. Other workers noted high incidence of stage-I (67%) (hypertension detection & follow up programe co-operative group,1977). Probably the difference is because the present study is hospital based while this study was community based.

Headache was a common symptom reported by the subjects in the present study (11 out of 53). This value is between the seventeen percent (17%) incidence of headache in previously undiagnosed hypertensives and 71% incidence of headache in diagnosed hypertensives (stuart-1953). Some Authors (kaplan,1993) have discussed the interesting hypothesis that the many symptoms discribed by the hypertensives are secondary to anxiety of having the “silent killer” as hypertension frequently described. Anxiety is often expressed as recurrent acute hyperventilation episodes. Many of symptoms discribed by hypertensives such as dizziness, palpitation & chest discomfort reflect recurrent hyperventillation. In this present study 5 patients reported dizziness, 4 give history of palpitation and 10 had chest pain. In a study by (weiss-et all 1972) reported that headache dizziness palpitation &
tinnitus were not seen more commonly in previously undiagnosed hypertensives, who compared to general population. Though other workers have argued for a more direct correlation between hypertension & it's symptoms (kaplan,1993). Especially with very high blood pressure headache do become more common. Headache is usually present upon awakening, is felt on back of head, may or may not be throbbing in character and often last for few hours even without analgesic therapy. It is interesting to note that sleep apnea is more common among even minimally obese hypertensives so early morning headache reflects not hypertension but nocturnal hypoxia.

Oedema which is definative sign, with no functional correlation, was present in 2 patients. In this group of patients, the number of those with BMI more than 25 was 26 subjects out of which 19 (4 male, 15 female) patients BMI were 30 or more even in absence of Type –II diabetes. Obesity is one of the major acquired factor responsible for hypertension. In the current group the majority (34 patients) were not obese. However the majority of the studies on comparison find little difference in the risk of major coronary events between lean and obese hypertensives (philips & shaper 1989). Two features must be considered in examining the risk of obesity related hypertension. First, the distribution of obesity with a significantly greater cardiovascular risk among those whose obesity is predominantly in the upper body (folsu et al 1993) second, factors that are responsible for leanness such as smoking and alcohol abuse which independent of hypertension increases the risk in lean individuals (stamler et al 1991). For these 19 subjects with BMI more than 30, the double burden of obesity & hypertension leads to a higher prevalence of CHD and CHF (messerli et al 1984).

When blood urea levels were considered 7 patients have value above 40 mg/dl. Out of these two patients were of chronic renal failure, were on conservative treatment. Renal dysfunction both structural and functional has been demonstrated by many workers. Renal involvement is generally asymptomatic and not demonstrable by usual clinical testing. The loss of renal function grows progressively as blood pressure increases & elevation continues. About 10.44% patients of hypertension die on renal failure (kaplan et al 1983). The serum creatinine was greater than 1.5 mg/dl in 2 patients. All these patients had renal failure. Otherwise the majority of serum creatinine values were 0.5 to 1.0 mg/dl (51 out of 53).

In terms of Hb levels this study had 23 patients with Hb levels 8 to 10.9 gm% & 24 patients with 11 to 13 gm%. 5 patients whose Hb level were more than 13 gm%. 1 patients was in range of 5 to 7.9 gm%. Crillo et
al 1992 reported higher hematocrits in hypertensives and the prevalence of hypertension doubles with an increase of 10% in the hematocrit. Gobel et al 1991 found a similar effect of hypertension on other red blood cell indices. Therefor a kind of pseudopoly cythemia exists in hypertension. This when combined with obesity and stress is called Gaisbock’s syndrome. So the findings of this study are more or less same.

Diabetes mellitus & hypertension co-exist more commonly than predicted by chance, perhaps three times more commonly (Kaplan et al 1994). The connection between hypertension, diabetes and obesity is strong especially for those who have predominantly upper body obesity. In 90% of diabetics with insulin dependent form (Type-II), almost all of who are obese, hypertension is more common than among obese people without diabetes (hypertension in diabetes study group 1993). The present study had 21 cases of diabetes who had a fasting blood glucose >140 mg%. Diabetic Nephropathy is now second only to coronary disease as a cause of death among diabetic hypertensives.

In this study when we consider serum total cholesterol (STC) levels, it is evident that 28 patients had levels equal or more than 200 mg/dl which were in the abnormal range. Out of which 11 patients had levels higher than 240 mg/dl. These data indicate significant incidence of hypercholesterolemia in these patients. Hypercholesterolemia and perhaps hypertriglyceridemia impair endothelium dependent relaxation. Some recent reports suggest that in hypertension that is not associated with impaired carbohydrate metabolism or with dyslipidemia. There is preservation of endothelium dependent vasodilation. The vascular endothelium is increasingly being recognized for its hormonal function as well as its regulation of vascular tone, growth and remodelling. Decreased lipoprotein lipase activity is common in individuals with hypertension & insulin resistance. As a result decreased conversion of cholesterol ester enriched very low density lipoproteins (VLDL) to LDL results in an increase in large and abnormal esters which in turn is injurious to endothelial cells. Several well conducted epidemiologic studies have demonstrated that cholesterol levels are significantly higher in hypertensive patients than in age, sex & body mass index matched normotensive patients.

Serum triglyceride levels in this group of patients were higher than 140 mg/dl in 5 patients. Although hyperlipidemia and high blood pressure are independently important risk factors, the likelihood of coronary events appears to be increased when two problems occur together. Regardless of the cause of accelerated atherosclerosis in patients with
concomitant lipid and blood pressure abnormalities, there are important therapeutic implications studies using coronary events as the end point of treatment for hypertensive patients have shown that treatment of high blood pressure alone or hypercholesterolemia alone produces only modest results. Only when both problems are controlled there is a marked reduction in coronary artery disease events.

On reflecting on the current data and taking into consideration of the recommendations of NCEP, it was found that about half of these patients attending the hypertension clinic required dietary modification followed up with therapeutic intervention, if required.

When complications were considered retinopathy was most common (19 out of 53), out of which two were diabetic retinopathy and rest hypertensive retinopathy. This was followed by heart disease (12 out of 53) . Renal failure was observed in 2 patients and CVA in one. These findings are more or less similar to those reported by Bauer et al (1976).

The most common effect of hypertension on heart is hypertrophy of left ventricle. Where as LVH is identified by electrocardiography in only 5.10% of hypertensives. LVH is found in about half of untreated hypertension by Echo (Ganav et al 1992), in the current study by ECG criteria 11.32% of the patients had hypertrophy.

Hypertension remains quantitatively the largest risk factor for coronary artery disease. In the present study as many as 24.5% had evidence of ischemic heart disease and myocardial infarction, when clinical history and ECG changes were considered together. Again these rate are much higher than those observed in community-based study. Probably this shows that those hypertensive which manifest morbidity attend the hypertension clinic. This can only be confirmed when we have more data which is community based from India.

Alphablocker group: Present study included 2 cases which came on regular follow up. Out of 12 cases 9 were males and 3 were females. Maximum number of cases were 61-71 yr age group. Mean systolic blood pressure at 0 week was 166 ± 18.02 mm Hg. At 2 weeks 147.82 ± 22.24 mm Hg, at 4 weeks 136 ± 18.83 mm Hg at 8 weeks 132.5 ± 16.06 mm Hg, at 16 or more weeks 129.33 ± 9.57 mm Hg while diastolic B.P was 102.33 ± 5.83 mmHg, 87.27 ± 7.21 mmHg, 80.83 ± 4.13 mmHg, 80.67 ± 6.84 mmHg, 78.83 ± 3.75 mmHg respectively. Two patients developed fatigue in first and second week
respectively but drug was not stopped. Fatigue gradually disappeared on follow up, with continuation of drug. One patient developed postural hypotension on second day of treatment, subsequently the drug was given at bed time. All the patients come regularly on follow up. In this group the maximum fall was observed at 2 weeks (18 mmHg systolic and 15 mm Hg diastolic). Fall was gradually progressive till 16 weeks though there was fall it was not significant after 4 weeks.

ACE inhibitor group:-- The were 22 patients in this group out of which 14 were males & 8 were females. Maximum No. of patients in 51 to 60 yr age group (both male & female). One patient developed dry cough at 8 week because of which ACE inhibitor had to be withdrawn. 2 patients developed mild cough at 16 weeks (both were females), but cough improved on continuation of therapy & by addition of antitussives. 3 patients did not respond adequately with lisinopril 10 mg BID so another drug (diuretic) was added at 4 weeks. They were excluded from the study there after. One patient did not respond with lisinopril 10 mg BID so another drug (diuretic) was added at 8 weeks. One patients BP (160/100) became normal at 8 weeks with drug and remained controlled without drug on subsequent follow up (at 16 weeks).

In this group mean systolic B.P. at 0 week was 160.73±18.7 mm Hg, at 2 weeks 146.55±18.14, at 4 weeks 140.55±23.32, at 8 weeks 130±12.07, at 16 weeks 127.65±9.37, while diastolic BP were 101.09±8 mm Hg, 18.55±740, 84.55±8.82, 81.37±4.22, 81.89±6.45 Respectively. In this group max. Fall was observed at 2 weeks (14mm Hg syst,12 mmHg diastolic), fall was progressive till 16 weeks, but significant reduction in BP was achieved at 8 weeks after which the decrease was not significant.

Ca-channel blocker group:--In this group total no. of patients were 19. Out of which 9 were males and 10 were females. Max. no of males were in 51-60yr group, where as there were 3 females in 41-50 yr and 51-60 yr age group respectively. In this group one patient developed headache at 8 weeks and was switched over to another drug. Two patients developed pedal oedema at 4 weeks and 8 weeks, both were females and were on amlodipine. They were switched over to other drug. One patient did not return for follow up after 8 weeks. One patient did not respond to drug even at max. dose. In this group mean systolic B.P at 0 week was 154.42 ± 22.84 mm Hg, at 2 weeks 135.37 ± 16.15 mm Hg, at 4 weeks 131.16 ± 14.47 mm Hg at 8 weeks 131.88 ±
12.68 mm Hg, at 16 weeks 133.71 ± 12.83 mm Hg while diastolic B.P was 98.32±14.94 mm Hg ,86.11 ± 7.55 mm Hg 82.74±5.25mmHg , 80.75±3.80 mmHg , 79.71 ±3.21 mmHg respectively. In this group max fall was with in two weeks of starting the drug (19 mm Hg syst,12 mm Hg diastolic). Though there was progressive fall till 8 weeks, significant reduction had been achieved by 8 weeks.

Max fall of systolic BP was between 14-19 mm Hg and diastolic fall was between 12-15 mm Hg at two weeks. It was maximum in Calcium channel blockers group.In alpha blockers group out of 12 patients BP was controlled in 2 patients at 2 weeks (16.66%). In ACE inhibitors group 7 patients (31%) and in calcium channel blocker 8 patients BP were controlled out of 19 patients (42%). But at 4 weeks follow up BP was controlled in majority of patients (47 out of 53, 88.6%).

At 4 weeks - In alpha blocker group 10 were controlled out of 12 patients (83.33%). In ACE inhibitor group 15 were controlled out of 22 patients (68.18%). In calcium channel blocker group 14 were controlled out of 19 patients.

At 8 weeks- In alpha blocker group 11 were controlled out of 12 patients (91.6%). In ACE inhibitor group 15 were controlled out of 19 patients (78.94). In Calcium channel blocker group 14 were controlled out of 16 (87.5%).

At 16 weeks- In alpha blockers group 12 were controlled out of 12 patients (100%). In ACE inhibitor group 15 were controlled out of 17 patients (88.2%). In calcium channel blocker group 13 were controlled out of 14 patients (92.8%).

When we compare the effect of alpha blockers, Calcium channel blockers and ACE inhibitors on Mean Arterial Pressure the percentage change at 16 weeks in alpha blockers group was 72.0 % (100 % at 0 week), in ACE inhibitor group was 82.61 % (100 % at 0 week) and in Calcium channel blockers group was 81.12 % (100 % at 0 week).

When we compare percentage change of systolic B.P. at 16 weeks, in alpha blockers group it becomes 77.90 (100 % at 0 week), in ACE inhibitors group 79.41(100 % at 0 week), and in Calcium channel blockers group 86.58 (100 % at 0 week).

When percentage change of diastolic B.P. at 16 weeks was seen, it was more in alpha blockers group (77.03 %) than ACE inhibitors and Calcium
channel blockers, which was more or less equal (81.00%, 81.07% respectively).

In the TOMH study by Neaton et al at 1993, they have observed maximum fall in systolic and diastolic BP with calcium channel blocker (amlodipine) and alpha blocker (DOXAZOSIN). In the present study maximum fall was observed with alpha blocker (PRAZOSIN) being 37 mm Hg in systolic and 24 mm Hg in diastolic BP at 16 weeks. The fall with ACE inhibitors at 16 weeks was 33 mm Hg systolic and 20 mm Hg diastolic BP. In the group on Calcium channel blocker the fall was 21 mm Hg systolic & 19 mm Hg diastolic at 16 weeks.

Therefore it can be inferred that maximum fall in both studies was in the group on alpha blockers. There was a difference in the magnitude of fall in patients on calcium channel blockers- Neaton et al (1993) have found them as effective as alpha blockers in decreasing systolic & diastolic BP where as the present study shows fall of a lesser extent with calcium channel blockers at 16 weeks. ACE inhibitors were least efficacious in lowering the BP in the study by Neaton et al. Where as in the present study efficacy of ACE inhibitor was found to be in between alpha blockers and calcium channel blockers at 16 weeks.

According to materson et al (1993), individual patients may vary considerably in the response to different drugs depending on age and race.

These differences may be possibly due to the fact that the study by Neaton et al was for 48 months where as this present study duration was 16 weeks. Another difference between these two studies was the inclusion of only mild hypertensives by Neaton et al where as the current study included mild, moderate and severe hypertensives.

An other study by materson et al (1995) they have shown that all six drugs used by them achieved statistically significant reduction in BP from base line. Similarly this study showed statistically significant reduction from base line for all three groups of drugs used in the present study. Materson et al observed that there was no difference in magnitude of fall in systolic and diastolic BP in different drug groups. In the present study it was observed that the greatest fall in magnitude at 16 weeks was with alpha blockers and least with calcium channel blocker’s.

In study by Reid G.L. et al (1989) they have observed the effect of treatment for six weeks with either nifedipine (calcium channel blocker),
enalapril (ACE inhibitor) or doxazosin (alpha blocker). All drugs lowered blood pressure to a similar extent. In this present study though statistically significant reduction was observed with all three groups. The magnitude of fall was greatest in the group on alpha blockers and least in calcium channel blockers group.