SUMMARY

1) The prevalence of hypertension among age and weight matched diabetic populations was found to be 47.85%. The occurrence of cardiac dysfunction was found to be higher in patients with the co-existence of the diabetes and hypertension than those with either essential hypertension or diabetes alone.

2) Incidences of hyperlipidaemia was found to be comparatively greater in diabetic patients with or without hypertension. This might be one of the factors responsible for the occurrence of cardiac dysfunction in such patients.

3) Enalapril, clonidine, nifedipine or atenolol monotherapy in diabetic and non-diabetic hypertensive patients produced an effective control of blood pressure in majority of the patients.

4) Treatment with enalapril and clonidine favourably altered the lipid profile. Nifedipine, however, did not produce any significant change in lipid profile and atenolol was found to adversely affect the triglyceride and HDL-cholesterol levels.

5) In the present study, none of the four antihypertensive drugs used produce any significant change in fasting blood glucose levels in non-diabetic hypertensive patients.

6) In diabetic hypertensive patients, fasting blood glucose levels were found to be significantly decreased in patients receiving antihypertensive treatment alongwith glibenclamide, as compared to those who did not receive any antihypertensive therapy but only glibenclamide. Further, the dose of glibenclamide required in diabetic patients receiving any of the four antihypertensives was significantly less than those on
The dose of glibenclamide required was relatively higher in diabetic hypertensive patients receiving atenolol as compared to those receiving other antihypertensive agents.

Creatinine and urea levels were found to be higher in patients with NIDDM or uncontrolled hypertension. Both the levels were significantly higher in 18% of diabetic hypertensive and 15% of non-diabetic hypertensive patients during 9 months enalapril therapy. Other antihypertensive agents did not affect any of these parameters in both the groups of patients throughout the 9 months of therapy.

Our data suggests that enalapril and clonidine can be considered as the drugs of choice for the treatment of hypertension in a situation where the correction of dyslipidaemia or glycemic-control is warranted. It can also be stated that atenolol should not be used, and more studies are required to prove the efficacy of nifedipine in such situation.

Administration of STZ in rats produced a significant loss of body weight, polydipsia and polyphagia. Treatment with clonidine significantly prevented loss of body weight in diabetic as well as diabetic hypertensive animals. Nifedipine treatment also significantly prevented the loss of body weight and polydipsia in diabetic animals.

Injection of STZ also produced a four fold increase in blood glucose levels which was associated with hypoinsulinaemia and glycosuria. In non-diabetic animals treatment with clonidine produced a rise in blood glucose levels whereas, in diabetic and diabetic hypertensive animals pretreatment with clonidine produced a significant decrease in glucose as well as insulin levels.
12) Short term treatment with nifedipine in diabetic rats was found to increase with the insulin release and a long term treatment with nifedipine produced an increase in insulin sensitivity.

13) Administration of STZ or DOCA alone produced a significant elevation of blood pressure in rats. Administration of DOCA in STZ diabetic animals failed to produce an additive rise in blood pressure. Animals treated with either clonidine or nifedipine did not show any elevation of blood pressure as compared to control.

14) STZ produced significant bradycardia along with hypothyroidism in rats. Treatment with clonidine or nifedipine prevented not only the STZ-induced bradycardia but also STZ-induced hypothyroidism in rats.

15) LVDP was found to be significantly lower at higher filling pressures in hearts obtained from diabetic animals as compared to those from controls. This was significantly prevented by treatment with clonidine or nifedipine.

16) Cardiac hypertrophy index (Wet heart wt/Body wt) was significantly increased in diabetic animals and this was also prevented by clonidine as well as nifedipine treatment.

17) STZ induced cardiomyopathy as revealed from the histopathological study of myocardium from diabetic hearts was also found to be prevented by treatment with clonidine and nifedipine.

18) STZ also produced increase in total cholesterol, triglycerides and LDL-cholesterol levels in STZ diabetic rats. Treatment with clonidine or nifedipine...
significantly prevented the increase in total cholesterol and triglyceride levels.

19) Serum creatinine and BUN levels were also found to be increased in diabetic rats. Clonidine treatment prevented this rise in creatinine levels.

20) SGPT and SGOT levels were found to be increased in diabetic as well as DOCA diabetic rats. Clonidine treatment prevented the rise in SGPT levels in both the groups of animals.

21) Histopathological study of the liver from diabetic animals revealed that there was vacuolisation and disruption in the normal arrangement of hepatic cords and sinusoids as compared to that of control animals. Clonidine treatment partially prevented this changes in liver obtained from diabetic rats.

CONCLUSIONS

1. The prevalence of hypertension is higher in patients with diabetes mellitus. The co-existence of diabetes and hypertension causes greater cardiac dysfunctions among these patients.

2. In diabetic hypertensive patients, antihypertensive therapy seems to potentiate the effect of oral hypoglycemic agent. This was observed at least in the patients receiving either enalapril, clonidine or nifedipine.

3. Clinical studies reveal that while atenolol adversely affects the lipid profile in diabetic as well as non-diabetic hypertensive patients, nifedipine offers neutral effects on lipid profile in this patients. Enalapril treatment favourably alters the lipid levels in both the groups of patients.
4. Clinical studies also revealed clonidine to have favourable effects on lipid levels in both diabetic as well as non-diabetic hypertensive patients. The results of animal studies were found to be consistent with those of clinical observation except for the high mortality observed with clonidine treatment.

5. The preference of antihypertensives in diabetic patients among four groups used may be considered as enalapril > clonidine > nifedipine > atenolol.