SUMMARY

Diabetes mellitus has become one of the world's most important public health problems. Type 2 DM is the predominant form of diabetes worldwide accounting for 90% of cases globally (***Buse et al., 2003).***

Type 2 DM is a vascular disease, more than 3 out of 4 diabetic patients die of causes related to atherosclerosis, in most cases (75%) because of coronary artery disease, yet; 70% of diabetic persons do not believe that they are at serious risk for cardiovascular disease (***Grundy et al; 2002).***

The human genome has been the focus of biological research for the last decade and will continue to be the center of attention for many years to come ***(Brown 2002).***

Lipoproteins are important determinants of atherosclerotic vascular disease in humans. The serum concentration and metabolism of lipoproteins are largely modulated by apolipoproteins and it has therefore been hypothesized that genetic variations in apolipoproteins are associated with the variation in the susceptibility to coronary artery disease ***(Schmitz et al; 2007).***

The human apolipoprotein (apo) E gene is a polymorphic gene with three common alleles (ε_2 ,ε_3,ε_4) coding for three isoforms (E_2,E_3,E_4). Polymorphism of apolipoprotein E gene has recently received an increasing attention in the causation of coronary artery disease ***(Schmitz et al; 2007).***

In an aim to study the relation between apolipoprotein E gene polymorphism and coronary artery disease in patients with type 2 DM, this study was done on forty patients with DM were attending diabetes mellitus clinic and cardiology clinic at Benha university hospitals. Of these forty patients, ten patients had ischemic ECG changes, ten patients had myocardial infarction and twenty patients were non ischemic. All patients were subjected to complete history analysis (with special emphasis on history of smoking, duration of DM and its medication, history of dyslipidemia and its medications, history of hypertension and its medications, history of macrovascular or microvascular complications of DM especially CAD), full clinical examination (with stress on Bl.p measurement, BMI measurement, lower limb examination, neurological examination, fundus examination in addition to cardiovascular examination), resting ECG and ECG stress test (for exclusion of IHD) and laboratory investigations including glycosylated Hb, serum lipids and identification of apo E genotype.

The results of this study were as follows:

- There was non significant difference between the mean ages of patients of different studied groups.

- The percentage of smokers was higher in group IB in relation to groups IA & II, but this without statistical significance.

- The percentage of hypertensives was highest in group IB; then group IA; followed by group II, but this was without statistical significance.

- The BMI OF patients of group IA was significantly higher in relation to groups IB & II.

●The serum cholesterol, serum TGs and LDL were higher in the ischemic group I in relation to the non ischemic group II, but this did not yield statistical significance. Also the HDL was insignificantly lower in group I patients in relation to group II.

●There was highly significant positive correlation between BMI and glycemic control represented by HbA_{1c}.

●There was significant positive correlation between lipid profile and HbA_{1c}.

●Apo E_4 patients showed the highest prevalence of CAD (83.33%), followed by apo E_3 patients (40.91%) and lastly apo E_2 patients (16.66%) (apoE_2 Vs apo E_4<0.05).

●There was non significant difference between groups IA&IB regarding the distribution of apo E genotypes.

● There was no significant relationship between apo E polymorphism and different CAD risk factors (smoking, hypertension, BMI and HbA_{1c}).

●As regarding the relationship between lipid profile and apo E genotype; the results were as follows: For serum cholesterol, there was highly significant difference between apo E_2 and each of apo E_4 and apo E_3 patients, while the difference between apo E_4 and apo E_3 (E_4>E_3) was not too big to give statistical significance. For serum LDL.C, there was highly significant difference between apo E_2 and apoE_4 patients, and significant difference between apo E_3 and each of apo E_2 and apo E_4 patients (E_4>E_3>E_2). For serum triglycerides and serum HDL.c, the results of our study showed that apo E_2 and apo E_4 genotypes patients had higher TGs and lower HDL levels in comparison to apo E_3 patients but the difference was without statistical significance.