SUMMARY

Endothelins belong to a family of vasoactive peptides implicated in several disorders of the microvasculature. Endothelin-1 with its well known vasoconstrictive and mitogenic actions and through its interactions with insulin, blood glucose and lipids might play an important role in the accelerated atherogenic process in diabetes mellitus.

The objective of the current study is to evaluate the effect imposed by some risk factors for example obesity, diabetes mellitus, hypertension and smoking on plasma endothelin-1 level and other plasma markers as a trial to find a correlation between plasma endothelin-1 and these risk factors and markers.

The study comprised 120 men allocated in 6 study groups:

- Group I: contained 20 normal men.
- Group II: contained 20 obese men.
- Group III: contained 20 hypertensive men.
- Group IV: contained 20 uncontrolled diabetic men.
- Group V: contained 20 controlled diabetic men men.
- Group VI: contained 20 smokers.

All of study participants were assigned for estimation of plasma levels of endothelin-1, insulin, C-peptide, glycosylated hemoglobin and blood lipid profile.

The obtained results showed a significantly higher fasting plasma ET-1 levels in all study groups compared to the control group and in uncontrolled diabetics compared with controlled diabetics. Furthermore, there was a significant increase of fasting plasma insulin levels in all study groups, except the smokers, as compared to the control levels and in uncontrolled diabetics compared with controlled diabetics.

Moreover, there was a significant increase in serum levels of TL, cholesterol, TGs, and LDL in obese and uncontrolled diabetic on comparison to the control levels. Also, there was a significant increase in serum TL, cholesterol and TGs in hypertensives and controlled diabetics as compared to the controls. Smokers showed a significant increase in serum TGs and LDL as compared to the controls. Furthermore, there was a significant increase in lipid profile in uncontrolled diabetics compared to controlled diabetics.

On the other hand, serum HDL was significantly decreased in all study groups compared with the control and in uncontrolled diabetics compared with controlled diabetics.

Furthermore, fasting plasma C-peptide and HBA1c showed no significant difference in obese, hypertensives and smokers compared with the normal control, while they were significantly increased in diabetic controlled and uncontrolled compared with normal control and in uncontrolled diabetics compared with controlled diabetics

Analysis of the obtained results showed the presence of a positive significant correlation between fasting plasma ET-1 and the mean BMI of obese subjects and the mean BP of hypertensives.

Furthermore, fasting plasma ET-1 showed a positive significant correlation with fasting plasma of insulin in all study groups, except the smokers, such correlation suggested a synergistic or additive effect of both peptides in the pathogenesis of obesity, hypertension and diabetes or in diabetes being uncontrolled.

Moreover, there was a positive significant correlation between fasting plasma levels of both ET-1 and insulin with serum levels of TL, cholesterol, TGs and LDL, and a negative significant correlation with serum levels of HDL in all study groups. These results signify the presence of a relationship between dyslipidemia occurring in obese,

hypertensives, diabetics, and smokers and these peptides. This relation may be causal or concomitant.

So, the increased fasting plasma levels of both ET-1 and insulin may play a role in the pathogenesis of either hypertension or diabetes or at least may have an additive role for the presence of uncontrolled diabetes. Also, the increased fasting plasma levels of both ET-1 and insulin may be concomitant to obesity as a cause or a result.