SUMMARY & CONCLUSIONS

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The study included three groups of subjects: urban, rural and Bedouin populations, all were inhabitants of Qalioubyah Governorate. Each group consisted of 10 randomly chosen non-insulin-dependent diabetics (type 2). For each patient, three healthy, preferably of young age, first degree relatives were chosen. All relatives were healthy, non-diabetic with normal liver and kidney functions.

All patients and their relatives were subjected to the following:

I-complete history and medical examination.

II-Laboratory investigations:

Were done to all diabetic patients and their relatives

1- Fasting & 2-hours pp. Blood glucose:

2- blood sugar curve

3-Liver function tests - included:

a)-Total serum bilirubin.

b)SGOT & SGPT liver enzymes: was done by colorimetric method using bromocresol green

4-kidney function tests : Serum creatinine was done by Jaffe method.

5-B-cell function parameters :

A-Plasma insulin level : (Fasting, 30 and 120 minutes).

Was done by radioimmuno-assay (RIA).

B-human C-Peptide level : (Fasting, 30 and 120 minutes).

Was done by radio-immuno-assay (RIA).

6-Hepatic insulin clearance : Was done According to (**Haffner et al., 1992**) calculations.

7-Insulin resistance:

Was done by homeostasis model assessment (HOMA).

8-Serum lipid profile : (using electrophoresis) :

Total serum cholesterol : was done by enzymatic colorimetric method with lipid clearing factor.

Total serum triglycerides : was done by enzymatic colorimetric method with lipid clearing factor.

HDL : Was done by determination of cholesterol after precipitation of chylomicrons, VLDL, and LDL.

Results:

The results of our work are presented in tables from (1) to (26) and in figures from (1) to (26).

Age:

Patients and their relatives were chosen with comparable ages and no significant difference existed.

Sex:

A-Patients :

For all patients groups, there were 12 males and 18 females.

B-Relatives :

49 males and 41 females were examined.

BMI:

A-Patients :

Statistically significant difference in BMI is noticed among the 3 studied groups (urban > rural > desert groups).

B-Relatives :

Non significant difference existed between the three ethnic groups.

Liver-function tests:

No statistically significant difference was detected between the three ethnic groups for both patients and relatives regarding SGOT, SGPT, S.bilirubin and S.albumin.

Serum creatinine:

Didn't show statistically significant differences in both patients and relatives

regarding serum creatinine.

Lipid profile

A-Patients :

There are significant increases for all parameters of lipid profile (S. TG, S.

Cholesterol and HDL-c) : Urban > Rural > Desert.

B-Relatives :

No statistically significant differences were observed regarding same parameters.

Plasma glucose:

There are statistically significant increases in both patients and relatives regarding plasma glucose : urban > rural > desert.

Patients Vs. relatives :

In all samples; there was statistically highly significant increase of plasma glucose towards urbanization: urban > rural >desert ethnic group.

Plasma C-Peptide:

There is statistically significant decease in C-peptide for both patients and relatives : urban > rural > desert.

Patients Vs. relatives :

Apart from comparison between urban and desert groups in samples I & 3 which were not statistically significant, there is significant increase of C-peptide: desert > rural > urban.

Hepatic insulin clearance:

Statistically significant increase of HIC is noticed; desert > rural > urban in all samples for both patients and their relatives.

Patients Vs. relatives :

Only the comparison between urban and desert groups in the third sample is statistically significant, otherwise, there is no statistically significant changes of HIC is noticed.

Serum insulin:

Results are controversial regarding serum insulin for both patients and relatives and no solid rule of statistical significance is followed; meanwhile, mean values were relatively higher than normal.

Insulin resistance:

There were statistically significant decreases in insulin resistance towards urbanization : desert > rural > urban for both patients and their relatives.

Patients Vs. relatives :

Statistically highly significant differences is noticed between the three groups and resistance is more towards urbanization.

Conclusions

1-Hepatic insulin clearance is a factor that explains the ethnic difference of prevalence of type 2 diabetes as it is statistically significant more in desert inhabitants than rural inhabitants, as well as it is statistically significant more in rural inhabitants than in urban inhabitants i.e. hepatic insulin clearance is lowered towards urbanization. Decreased hepatic insulin clearance is proposed to maintain normoglycemia in the face of combined insulin resistance and decreased insulin secretion.

2-Ethnic differences also contribute to the findings concluded from our study regarding insulin resistance, as it was also increased towards urbanization and significant statistical difference was observed: urban > rural > desert.

3-Impaired glucose metabolism " hyperglycemia and high C-Peptide serum levels" showed statistically significant difference in both patients' and relatives' ethnic groups: urban > rural > desert, reflecting a genetic predisposition to type 2 diabetes.

4-Regarding lipid profile, there was no statistical difference between the three relatives' ethnic groups, meanwhile, there was statistically significant difference regarding patients' groups: urban > rural > desert. This may be explained by the important role of the environmental factors (life style, diet habits ...etc.) working later on in life.

Recommendations

Encouraging factors that improve hepatic insulin clearance and insulin resistance, as active lifestyle, balanced low-fat food consumption patterns, and stimulation of physical activity to effect maintenance of lower weight in susceptible groups.

It must be recognized that the benefit of exercise and other life-style interventions in improving the metabolic abnormalities of type 2 diabetes is probably greatest when it is used early in its progression from insulin resistance to impaired glucose tolerance to overt hyperglycemia requiring treatment with oral glucose lowering agents and finally to insulin.

Nutrition therapy that apply to all susceptible groups should achieve the following goals:

1- Attain and maintain optimal metabolic outcomes including:

- Blood glucose levels in the normal range or as close to normal as is safely possible to prevent or reduce the risk for complications of diabetes.
- A lipid and lipoprotein profile that reduces the risk for macrovascular disease.
- Blood pressure levels that reduce the risk for vascular disease.

2- Prevent and treat the chronic complications of diabetes. Modify nutrition intake and life style as a appropriate for the prevention and treatment of obesity, dyslipidemia, cardiovascular disease, hypertension, and nephropathy.

3- Improve health through healthy food choices and physical activity.

4- Address individual nutritional needs, taking into consideration personal and cultural performances and lifestyle while respecting the individual's whishes and willingness to change.