SUMMARY

Carnitine, a quaternary amine synthesized from the amino acids lysine and methionine, is essential in β-oxidation via transporting long-chain fatty acids across inner mitochondrial membrane. As fatty acid oxidation is an important energy-providing pathway, carnitine is essential for children for energy utilization, ketogenesis, thermal regulation and growth.

Beside its role in transporting long-chain fatty acids, L-carnitine is essential for the lipid and carbohydrate metabolism, and proper metabolic control in type I DM has potential impact on long-term complication.

Diabetes mellitus is the most common endocrine metabolic disorder of childhood and adolescence with important consequences on physical and emotional development.

The present study was undertaken to assess carnitine levels in plasma in insulin-dependent diabetic children and to determine whether the carnitine metabolism is modified also in relation to the metabolic control of the diabetic disease.

This study will include 60 children and adolescents whom will be received from pediatric clinic, pediatric department, Benha University.

They were divided into two groups: ***Group I (control):*** included 20 non-diabetic healthy children within the same age groups. They were **8** males and **12** females with a mean age **10.65±2.98** years. ***Group II (cases):*** included 40 children and adolescents with insulin-dependent juvenile diabetes; they were **16** male and **24** female with a mean age **11.48±2.8 5** years. All diabetics were treated with mixed insulin preparation (30% short-acting and 70% long-acting), mostly twice a day, appropriate diet and regular physical activity. Under sterile aseptic techniques venous blood samples were obtained in the morning after a night's fast in a sterile test tubes, after which the diabetics got their usual insulin dose. In all samples plasma free carnitine levels were determined by U.V spectrophotometer technique.

The results of this study revealed that the plasma free carnitine levels were highly significantly lower in diabetic children (group II) than in the control group (group I). Also, there was a significant negative correlation between duration of diabetes and plasma free carnitine level.

The effect of F.B.S, age, creatinine, lipid profile, HBA_{1c}, urine microalbumine on plasma free carnitine levels was studied. Plasma carnitine levels did not vary in relation to F.B.S, age, creatinine, lipid profile, HBA_{1c} and urine microalbumine.

CONCLUSION

In view of this study, plasma free carnitine levels were low in children and adolescents with diabetes mellitus and this decrease seen partly reflect increased acylation of carnitine. Furthermore, clear evidence is provided that this decrease is time related and that patients with long-standing diabetes are prone to carnitine alterations.

Larger studies are needed in order to draw firm conclusions and to explore a possible role, if any, of supplementary carnitine in the prevention of diabetic complications.