

THE RELATIONSHIP BETWEEN SERUM LEVEL OF C-PEPTIDE AND THE AGE, BODY MASS INDEX, AND INSULIN DOSES IN NEWLY DIAGNOSED TYPE 1 DIABETIC CHILDREN

Gülay Karagüzel¹ Deniz Usta¹ Ayşegül Tavacı¹ Mustafa F Tanış¹
Ercüment Beyhun²

¹Karadeniz Technical University, School of Medicine, Department of Pediatric Endocrinology, ²Department of Public Health, Trabzon, Turkey

INTRODUCTION

C-peptide is an important indicator of endogenous insulin release. Our aim was to investigate the association of serum C-peptide levels with age, body mass index (BMI) and insulin doses in newly diagnosed type 1 diabetic (DM1) children.

MATERIAL and METHODS

The patients with newly diagnosed DM1 were enrolled the study and classified as DM1A and DM1B. Clinical and laboratory findings of all the patients were recorded. Daily insulin doses, BMI and its z score were calculated. Fasting and two hours after the meal serum samples were obtained for C-peptide levels. The statistical analyses were performed using the SPSS.

RESULTS

Although serum C-peptide levels of DM1B patients were higher (fasting and postprandial 0.53 ± 0.80 ng/ml and 0.98 ± 1.29 ng/ml, respectively) than those of DM1A patients (fasting and postprandial 0.41 ± 0.39 ng/ml, 0.43 ± 0.36 ng/ml, respectively), we found only significant difference in postprandial C-peptide levels between the groups ($p < 0.05$). There was a significant positive correlation between both fasting and postprandial C-peptide levels and age, BMI, and BMI z score ($p < 0.001$). There was no significant correlation between serum C-peptide levels and insulin doses.

CONCLUSIONS

C-peptide levels might be affected by body fat and age as well as pancreatic beta-cell function. It is known that body fat is to be related to insulin resistance. However, there are only a few studies evaluating the effect of BMI on C-peptide levels in children with DM1. We found a strong correlation between serum C-peptide levels and BMI and its z score. Therefore, it is important to evaluate serum C-peptide levels according to age and BMI while performing clinical assessment and differential diagnosis.

Table 1: Clinical and laboratory characteristics of the patients.

	Girls* n= 66	Boys n= 87	Total n= 153
Diagnosis Age (Years)	7.6 ± 3.8	8.1 ± 3.9	7.9 ± 3.8
BMI(kg/m ²)			
Baseline	16.2 ± 3.3	16.9 ± 3.1	16.6 ± 3.2
Month 1	17.4 ± 3.4	17.8 ± 2.8	17.6 ± 3.1
Month 3	16.8 ± 2.6	17.8 ± 2.5	17.4 ± 2.6
BMI z-score			
Baseline	-0.60 ± 1.62	-0.38 ± 1.67	-0.5 ± 1.7
Month 1	-0.13 ± 1.41	0.20 ± 1.12	0.1 ± 1.2
Month 3	-0.24 ± 1.42	0.15 ± 1.11	0.0 ± 1.2
Fasting C-peptid (ng/ml)	0.51 ± 0.46	0.38 ± 0.56	0.4 ± 0.5
Postprandial C-peptid (ng/ml)	0.61 ± 0.62	0.54 ± 0.86	0.6 ± 0.8
Insulin dose (IU/kg/g)			
Baseline	0.59 ± 0.24	0.56 ± 0.26	0.6 ± 0.3
Month 1	0.52 ± 0.22	0.49 ± 0.23	0.5 ± 0.2
Month 3	0.56 ± 0.20	0.49 ± 0.19	0.5 ± 0.2

*When compared with boys p >0.05

Table 2: Clinical and laboratory characteristics of the patients according to diabetes type.

	Tip 1A n= 115	Tip 1B n= 38	p
Baseline Age (Years)	8.1 ± 3.7	9.1 ± 4.4	NS
Last Visit	9.36 ± 3.81	10.61 ± 4.31	NS
BMI(kg/m ²)			
Baseline	16.5 ± 3.0	16.7 ± 3.8	NS
Month 1	17.4 ± 2.9	18.16 ± 3.5	NS
Month 3	17.4 ± 2.6	17.6 ± 2.8	NS
BMI z-score			
Baseline	-0.42 ± 1.64	-0.64 ± 1.72	NS
Month 1	-0.12 ± 1.19	0.21 ± 1.32	NS
Month 3	-0.05 ± 1.22	0.00 ± 1.25	NS
Fasting C-peptid (ng/ml)	0.41 ± 0.39	0.53 ± 0.80	NS
Postprandial C-peptid (ng/ml)	0.43 ± 0.36	0.98 ± 1.29	<0.05*
Insulin dose (IU/kg/g)			
Baseline	0.57 ± 0.25	0.58 ± 0.25	NS
Month 1	0.50 ± 0.22	0.51 ± 0.23	NS
Month 3	0.53 ± 0.19	0.50 ± 0.22	NS

*p <0.05 Statistically significant