

RAPID ACTING INSULIN ANALOGUE TREATMENT IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS; INSULIN GLULISINE EXPERIENCE

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INTRODUCTION

The main purpose of insulin analogue treatment is mimicking physiologic insulin secretion and accomplishing a good glycemic control without having late hypoglycemia in patients with diabetes mellitus. In fact, fast absorption and acting affect of insulin preparation and having low risk of late hypoglycemia affect is important in children with type 1 diabetes mellitus (DM). In this report, 24 weeks follow-up results of newly diagnosed type 1 DM patients treated with insulin lispro and insulin glulisine is discussed.

MATERIAL- METHODS

Twelve patients diagnosed with type 1 DM patients in between 4-16 years were involved in the study. Patients were put on Insulin glargine plus insulin glulisine (IG, Group I) or insulin lispro (IL, Group II) treatment. Patients were followed up with one/three month intervals. Fasting blood glucose (FBG), postprandial blood glucose (PBG), 03 AM blood glucose (03 BG) recordings of the patients, HbA1c levels and clinical evaluation of the cases were compared.

Table 1. 24 week follow up results of 6 patients using insulin glulisine

Parameters	0 th month	3 rd months	6 th month
Age (years)	13.7 ± 2.97	-	-
Body mass index (kg/m ²)	18.4 ± 2.9	18.8 ± 1.9	18.5 ± 1.6
HbA1c (%)	13.0 ± 1.6	7.4 ± 1.8	8.6 ± 3.4
Fasting blood glucose (mg/dl)	-	117.8 ± 11.2	118.2 ± 9.2
Post prandial blood glucose (mg/dl)	-	145.0 ± 18.3	135.0 ± 27.0
03 AM blood glucose (mg/dl)	-	138.3 ± 22.4	130.7 ± 20.8

Table 2. 24 week follow up results of 6 patients using insulin lispro

Parameters	0 th month	3 rd months	6 th month
Age (years)	8.1 ± 2.7	-	-
Body mass index (kg/m ²)	14.8 ± 1.7	15.2 ± 1.9	15.6 ± 1.3
HbA1c (%)	12.2 ± 1.8	7.5 ± 0.9	8.2 ± 1.1
Fasting blood glucose (mg/dl)	-	130.6 ± 28.4	161.0 ± 41.5
Post prandial blood glucose (mg/dl)	-	146.8 ± 27.3	157.6 ± 24.0
03 AM blood glucose (mg/dl)	-	168.2 ± 35.5	156.0 ± 1.3

Table 3. 24 week follow up results of the patients

Parameters	3 rd month glulisine	3 rd month lispro	6 th month glulisine	6 th month lispro
HbA1c	7.47 ± 1.8	7.5 ± 0.9	8.6 ± 3.4	8.2 ± 1.1
Fasting blood glucose (mg/dl)	117.8 ± 11.2	130.6 ± 28.4	118.2 ± 9.2*	161.0 ± 41.5*
Post prandial blood glucose (mg/dl)	145.0 ± 18.3	146.8 ± 27.3	135.0 ± 27.0	157.6 ± 41.5
03 AM blood glucose (mg/dl)	138.3 ± 22.4	168.2 ± 35.5	130.7 ± 20.8*	156.0 ± 1.3*
Total daily insulin dosage (U/kg/day)	0.41 ± 0.12	0.45 ± 0.11	0.42 ± 0.18	0.57 ± 0.20

RESULTS

Anthropometric evaluation, HbA1c and blood glucose levels of the cases are represented in Table 1 and 2. Two patients in Group I and 6 patients in Group II were diagnosed as diabetic ketoacidosis at the administration. Insulin application was before meals in 4 patients and after meals in 2 patients in Group I and before meals in all patients in Group II. Postprandial asymptomatic hypoglycemia was observed in 2 patient (1/week in one patient and 5-6/week in the other) in Group I and 3 patients (1/week in one patient and 5/week in 2 patients) in Group II. None of the patients had symptomatic hypoglycemia. Comparison of the 24 weeks follow-up results of the groups is given in Table 3. FBG and 03 BG levels of Group I was statistically lower than Group II (p<0.05). Furthermore, PBG and total daily insulin dosage was lower in Group I then Group II but it was statistically insignificant.

CONCLUSION

In children and adolescents, the long interval between insulin injection and food consumption makes adaptation of daily life harder. There are different opinions about different insulin analogues in the literature. One of them is the quick absorption and better glycemic control effect of insulin glulisine because of the polysorbate 20, which is used to increase bio stability of the product instead of zinc. In this study, the efficacy of insulin glulisine was found at least as good as insulin lispro. We think that the ability of application of insulin glulisine just after meals is a benefit for pediatric age group.

