

Effect of Nutritional Diet Therapy in Pediatric Diabetic Patients

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Abstract: Objective: To analyze the effect nutritional diet therapy in pediatric diabetic patients. **Methods:** The study object was 60 cases of children with diabetes, which were divided into groups and treated separately according to the time of admission, and the treatment effects were compared. **Results:** After treatment, the glycated hemoglobin level, fasting blood glucose level, blood glucose level at 2 hours after meal, serum calcium level, transferrin level, albumin level, prealbumin level, hemoglobin level, the height, weight, and head circumference of the experimental group were better than those of the control group, and there were significant differences between the groups ($P<0.05$). **Conclusion:** The application of nutritional diet therapy in the treatment of pediatric diabetic patients can significantly improve blood glucose levels, nutritional indicators and physical indicators of patients.

Keywords: Pediatric diabetes; Nutritional diet therapy; Therapeutic effect

Publication date: May, 2020

Publication online: 31 March, 2020

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Diabetes is currently a relatively common clinical disease. Patients have significant endocrine and metabolic disorders, which are traditionally found in middle-aged and elderly people. However, with the improvement of people's living standards, changes of living structure, and the influence of many factors such as genetics, diabetes has shown a trend of ageing, and the incidence of diabetes among adolescents and children is constantly rising, which has a serious

adverse impact on their daily life and study. According to related research, unreasonable diet is the main cause of diabetes in children, so in the process of clinical treatment for children with diabetes, it is recommended to try to apply nutritional diet treatment. In this study, 60 pediatric diabetic patients were selected as the research object, grouped and treated separately, and the treatment effects were compared. The report is as follows.

1 Information and methods

1.1 General information

The study object was 60 cases of children with diabetes who were treated in our hospital from September 2018 to September 2019. They were divided into groups and treated separately according to the time of admission. A total of 30 patients in the experimental group, including 17 males and 13 females, were (8.4 ± 3.5) years old. The minimum was 5 years old and the maximum was 15 years old. The course of disease was (3.10 ± 1.2) years with the shortest year of half a year and the longest year of 6 years. A total of 30 patients in the control group, including 18 males and 12 females, were (8.8 ± 3.2) years old. The minimum was 6 years old and the maximum was 15 years old. The course of disease was (3.13 ± 1.4) years with the shortest year of 0.7 year and the longest year of 6 years. There was no significant difference between the general data in the groups ($P>0.05$). The study was approved by the ethics committee, and the patients and their families were informed and agreed about the purpose, method,

process, and possible results of this study.

1.2 Treatment

1.2.1 Treatment of patients in the control group

Patients in the control group were treated with conventional measures, including insulin injections and hypoglycemic drugs, which depended on the patient's condition.

1.2.2 Treatment of patients in the experimental group

The patients in the experimental group were treated with nutritional diet, and their body mass index was calculated according to the height and weight of the patient to determine whether it was within the standard range. Based on various relevant factors such as the patient's condition, preferences, nutritional status and body mass index, a personalized diet plan was developed for the patient, and then the daily calorie intake was calculated according to the age of the patient. If the patient is over 10 years old, the daily calorie intake should be 0.18MJ / kg, if the patient is under 10 years old, the daily calorie intake should be 0.19MJ / kg. After accurately calculating the daily calorie intake of the patient. It is also necessary to calculate the intake of carbohydrates, fat and protein in order to control daily carbohydrate intake between 30% and 45%, fat intake between 30% and 40%, and protein intake between 40% and 55%. Pay attention to the reasonable distribution of calories in the three meals. The calories should be maintained at 20% for breakfast, 5% for morning snack, 30% for lunch, 10% for afternoon snack, 30% for dinner, and 5% for night snack. The patient's diet is required to be grain-based, supplemented

by corresponding cereals, such as corn, sorghum, soybeans, etc., and the overall diet needs to be light and digestible. Patients are encouraged to eat more fresh fruits and vegetables with lower sugar content. It is strictly forbidden for patients to use hard, greasy and high-sugar foods, and protein should be supplemented by eating lean meat, eggs, and milk.

1.3 Observation index

In this study, the changes in patients' blood glucose levels, nutritional index and physical index were used as observation indexes to carry out comparison work between groups.

Blood glucose levels mainly include glycated hemoglobin, fasting blood glucose, and blood glucose 2 hours after a meal.

Nutritional index include serum calcium, transferrin, albumin, prealbumin, and hemoglobin.

Physical index mainly include height, weight, and head circumference.

1.4 Statistical methods

SPSS 20.0 was used to analyze and process the data in the study.

2 Result

2.1 Comparison of blood glucose levels of two groups

After treatment, the glycated hemoglobin level in the experimental group was $(7.05 \pm 2.13)\%$, the fasting blood glucose level was (6.29 ± 1.14) mmol / L, and the blood glucose level at 2 hours after the meal was (9.34 ± 2.13) mmol / L. The comparison has a significant difference ($P < 0.05$). See table 1.

Table 1. Comparison of blood glucose levels of two groups ($\bar{x} \pm s$)

groups	glycated hemoglobin (%)		fasting blood glucose(mmol/L)		blood glucose at 2 hours after the meal(mmol/L)	
	before treatment	after treatment	before treatment	after treatment	before treatment	after treatment
experimental group(n=30)	11.21±2.25	7.05±2.13	10.56±2.58	6.29±1.14	16.52±4.12	9.34±2.13
control group(n=30)	11.32±2.18	9.14±2.31	10.49±2.37	8.24±1.23	16.49±4.27	13.31±2.28
<i>t</i>	2.753	11.467	3.742	13.148	1.735	12.056
<i>P</i>	>0.05	<0.05	>0.05	<0.05	>0.05	<0.05

2.2 Comparison of nutritional index levels between two groups

After treatment, the serum calcium level of

the experimental group was (2.43 ± 0.32) mol / L, the transferrin level was (2.40 ± 0.59) g / L, the albumin level was (40.57 ± 3.35) g / L,

prealbumin level was (256.64 ± 13.22) mol / L and the hemoglobin level was (136.57 ± 16.97) g / L.

There were significant differences between the groups ($P < 0.05$). See table 2.

Table 2. Comparison of nutritional index levels between two groups ($\bar{x} \pm s$)

groups	time	serum calcium(mol/L)	transferrin(g/L)	albumin(g/L)	prealbumin(mol/L)	hemoglobin(g/L)
experimental group(n=30)	before treatment	1.78±0.25	1.44±0.31	27.58±2.33	172.55±20.34	87.48±11.09
control group(n=30)	before treatment	1.81±0.23	1.42±0.27	27.43±2.14	171.51±20.14	87.11±10.34
<i>t</i>	-	2.726	1.347	3.069	1.002	1.740
<i>P</i>	-	>0.05	>0.05	>0.05	>0.05	>0.05
experimental group(n=30)	after treatment	2.43±0.32	2.40±0.59	40.57±3.35	256.64±13.22	136.57±16.97
control group(n=30)	after treatment	1.91±0.35	2.00±0.32	31.60±2.40	171.53±20.14	107.13±10.34
<i>t</i>	-	13.085	12.431	10.729	11.745	10.992
<i>P</i>	-	<0.05	<0.05	<0.05	<0.05	<0.05

2.3 Comparison of physical indexes between two groups

After treatment, the patients in the experimental group had a height of (93.36 ± 18.55) cm, a

body weight of (14.45 ± 2.31) kg, and a head circumference of (49.51 ± 7.10) cm. There was a significant difference between the groups ($P < 0.05$). See table 3.

Table 3. Comparison of physical indexes between two groups ($\bar{x} \pm s$)

groups	height(cm)		body weight(kg)		head circumference(cm)	
	before treatment	after treatment	before treatment	after treatment	before treatment	after treatment
experimental group(n=30)	70.25±20.26	93.36±18.55	8.85±2.15	14.45±2.31	36.35±7.45	49.51±7.10
control group(n=30)	70.14±20.13	80.56±16.64	8.51±2.34	10.25±2.38	36.24±7.16	39.64±8.52
<i>t</i>	4.570	11.972	3.097	12.542	2.772	11.506
<i>P</i>	>0.05	<0.05	>0.05	<0.05	>0.05	<0.05

3 Discussion

Accurate calculation and reasonable adjustment of calorie intake is the key to the application of nutritional diet treatment, requiring family members to strictly control the patient's diet and maintain that they can continue to follow the principle of 'eat less and eat more meals' to avoid sudden blood glucose rise after meals. And in the process of applying nutritional diet treatment, it is necessary to pay attention to a reasonable combination of meals to ensure the stability of the patient's blood sugar, but it is not allowed to eat coarse grains for a long time, avoiding the burden on the patient's gastrointestinal tract and the absorption of nutrients.

This study showed that after treatment, the glycated hemoglobin level in the experimental group was (7.05 ± 2.13)%, the fasting blood glucose level was (6.29 ±

1.14) mmol / L, and the blood glucose level at 2 hours after the meal was (9.34 ± 2.13) mmol / L. The serum calcium level in the experimental group was (2.43 ± 0.32) mol / L, the transferrin level was (2.40 ± 0.59) g / L, the albumin level was (40.57 ± 3.35) g / L, and the prealbumin level was (256.64 ± 13.22) mol / L, hemoglobin level was (136.57 ± 16.97) g / L. The height of the patients in the experimental group was (93.36 ± 18.55) cm, the body weight was (14.45 ± 2.31) kg, and the head circumference was (49.51 ± 7.10) cm. There were significant differences between the groups ($P < 0.05$).

In summary, applying nutritional diet therapy to the treatment of pediatric diabetic patients can significantly improve the patient's blood glucose levels, nutritional index and physical index, which is conducive to the improvement of the patient's life quality, and provides a guarantee for the smooth development of daily life

and study. It can be seen that this treatment has high application value.

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