

# THE RESULTS OF EVALUATION OF DYNAMICS OF LEVELS OF GLYCEMIA IN DIABETES MELLITUS TYPE 1

E. Makhlina, Y. Navmenova\*, E. Kholodova\*\*, T. Mokhort\*\*

SI Republican Research Centre for Radiation Medicine and Human Ecology, Gomel State Medical University\*, Belarusian State Medical University\*\*



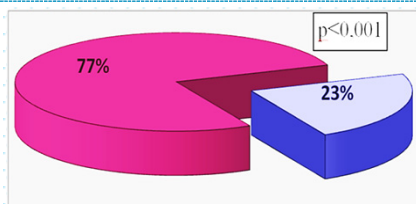
The aim of the work was to assess the dynamics of rates of carbohydrate metabolism in diabetes mellitus type 1 (DMT1) in young persons.

**Materials and methods.** The study of daily dynamics of glucose was conducted by Continuous Glucose Monitoring System (CGMS) of MedtronicMINIMED Company, USA. Standard glucose profile (4-5 per day) was measured in capillary blood by glucometer «Finetest™», Infopia Co., Ltd. For the analysis of continuous glycemic curve there was conducted the computation of risk index (RI) of hypoglycemia and hyperglycemia during the study period.

There were examined 162 patients with DMT1. First group with adequate control DMT1,  $HbA1c \leq 7,5\%$  ( $n = 38$ ), which is 23% and second group with inadequate control,  $HbA1c > 7,5\%$  ( $n = 124$ ), which is 77% of the total number of examined persons.

## Clinical characteristics of the examined persons depending on hypoglycemic episodes manifestation Me

	1 <sup>st</sup> Group with $HbA1c \leq 7,5\%$ ( $n = 38$ )	2 <sup>nd</sup> group with $HbA1c > 7,5\%$ ( $n = 124$ )	P
Age, years	29,81 [25,84; 35,26]	28,73 [21,94; 36,04]	0,388
Duration of T1DM, years	7,71 [2,98; 13,53]	8,52 [3,89; 14,22]	0,289
Body mass index, kg/m <sup>2</sup>	23,64 [21,46; 26,00]	23,73 [21,96; 26,14]	0,541
Weight, kg	68,50 [57,50; 77,00]	65,00 [58,00; 76,00]	0,273
Number of SU per day	16,00 [13,00; 19,00]	17,00 [14,00; 19,00]	0,313
Day dose of insulin, IU/day	39,50 [32,00; 48,00]	50,00 [40,50; 58,50]	0,001



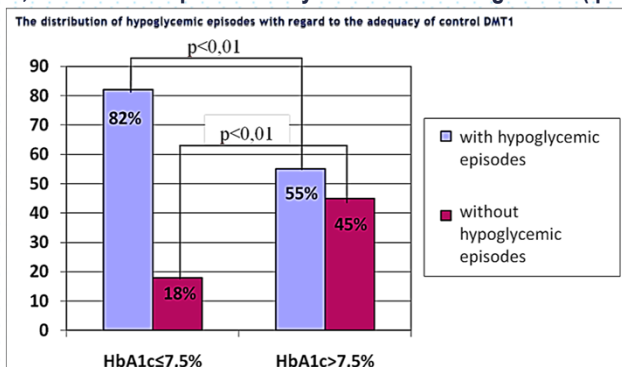
□  $HbA1c \leq 7,5\%$   
■  $HbA1c > 7,5\%$

**Adequate control of DMT1 was only in 23% of examined patients, in 77% there has been noticed decompensation of DMT1 ( $p < 0,05$ )**

In the group with  $HbA1c > 7,5\%$  there has been noticed decompensation of DMT1 due posthypoglycemic hyperglycemia (RI of hypoglycemia 5,00 [1,60; 9,20], RI of hyperglycemia 16,24 [10,45; 20,60]). In both groups RI of hypoglycemia exceeded 4,5 (group with  $HbA1c \leq 7,5\%$  5,60 [3,00; 10,50], group with  $HbA1c > 7,5\%$  5,00 [1,60; 9,20]), which indicate a high risk of development of hypoglycemic reactions.

	1 <sup>st</sup> Group with $HbA1c \leq 7,5\%$	2 <sup>nd</sup> group with $HbA1c > 7,5\%$	p
Average glucose, mmol/l	8,15 [6,90; 10,00]	10,40 [8,90; 12,70]	<0,001
Minimum glucose, mmol/l	2,30 [2,20; 2,80]	2,80 [2,20; 4,20]	0,004
Maximum glucose, mmol/l	17,25 [15,10; 19,60]	20,30 [17,70; 22,20]	<0,001
RI of hypoglycemia	5,60 [3,00; 10,50]	5,00 [1,60; 9,20]	0,406
RI of hyperglycemia	8,25 [4,80; 14,70]	16,24 [10,45; 20,60]	0,001

In the group with adequate control hypoglycemic episodes have been registered in 82% of the patients and only 18% didn't have them ( $p < 0,001$ ). In decompensation of DMT1 hypoglycemic reactions had 55% of patients, and in 45% of patients they have not been registered ( $p > 0,05$ ).



**CONCLUSION:** In 77% of the examined patients with DMT1 there have not been achieved target values of compensation, which is approved by the increased value of RI hypo- and hyperglycemia. Decompensation of DMT1 is caused by posthypoglycemic hyperglycemia. Regardless of the DMT1 control adequacy there has been marked a high risk of hypoglycemic reactions (RI hypoglycemia more than 4,5).