

EFFECT OF GLYCEMIA ON SLEEP INDICATORS FOR PATIENTS WITH TYPE 1 DIABETES MELLITUS

I.Doroshkevich, T.Mokhort, S.Tishkovsky, L. Nikonova, V. Lyschik
Belarusian State Medical University, Grodno State Medical University,
Grodno Regional Clinical Hospital

INTRODUCTION

- Investigation of sleep structure and its disorders in patients with somatic diseases is very topical, since sleep process is involved in regulating the secretion of various hormones and the regulation of glucose homeostasis.
- The study evaluates the impact of glycemia on the parameters of night's sleep in patients with decompensated type 1 diabetes mellitus (T1DM).

MATERIALS AND METHODS:

- The study included 21 patients with T1DM aged 19 to 52 years with average HbA1c 8.5%.
- Two groups of patients, depending on the average level of glucose (ALG):
 - group A - 10 patients with ALG ≤ 7.75 (6.5-8.3) mmol/l,
 - group B - 11 patients with ALG ≥ 11.6 (8.9-16.6) mmol/l.

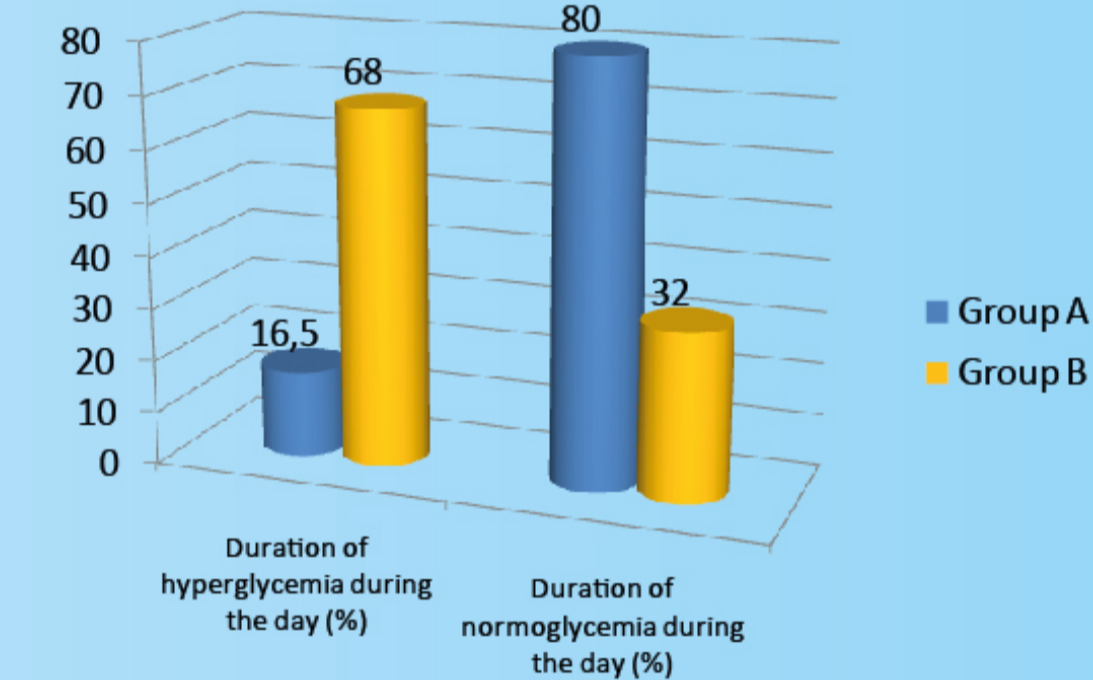
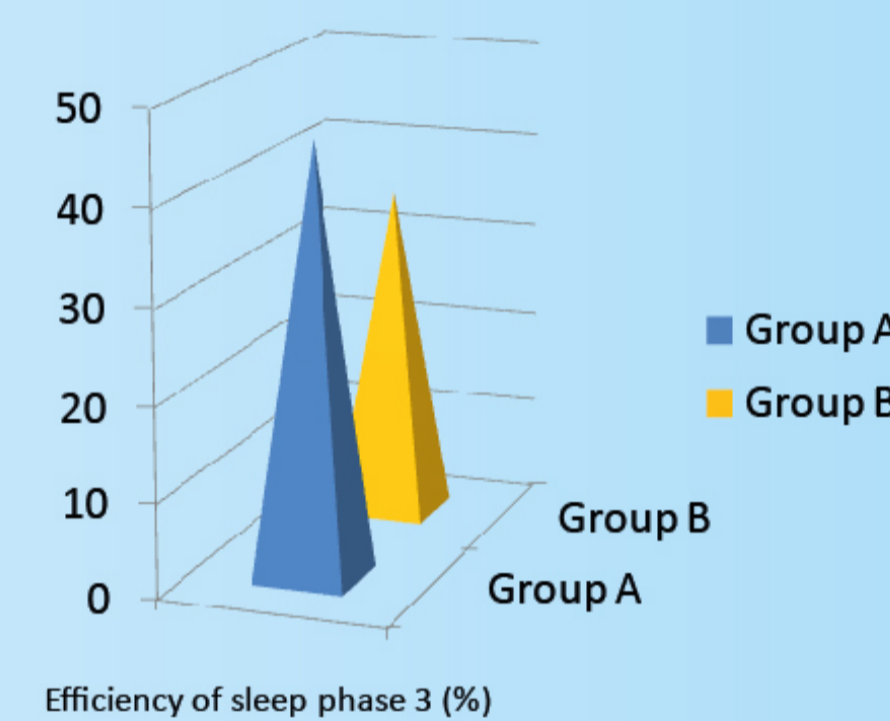
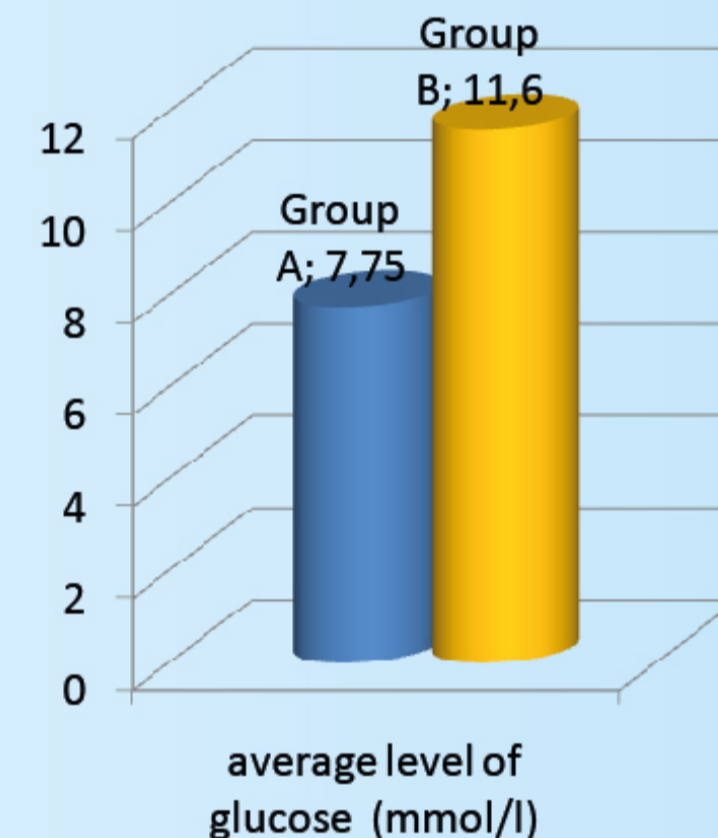
All patients underwent polysomnographic monitoring using a diagnostic complex "SOMNOLab 2 Polysomnography".

The monitoring of the average daily glycemia was performed using "SGMSGold" manufactured by "Medtronik" (USA).

MEASUREMENTS AND RESULTS

Table - Comparative characteristics results

Indicators	Group A	Group B
ALG (mmol/l)	7.75 (6.5-8.3)	11.6 (8.9-16.6)
Duration of hyperglycemia during the day (%)	16.5 (6.0-34.0)	68 (21-86)
Duration of normoglycemia during the day (%)	80 (61-92)	32 (14-79)
Sleep onset latency - SOL (min.)	56.5 (20-133)	14 (12-80)
Efficiency of sleep phase 3 (%)	45.6 (30.5-74.8)	35.8 (15.9-50.9)



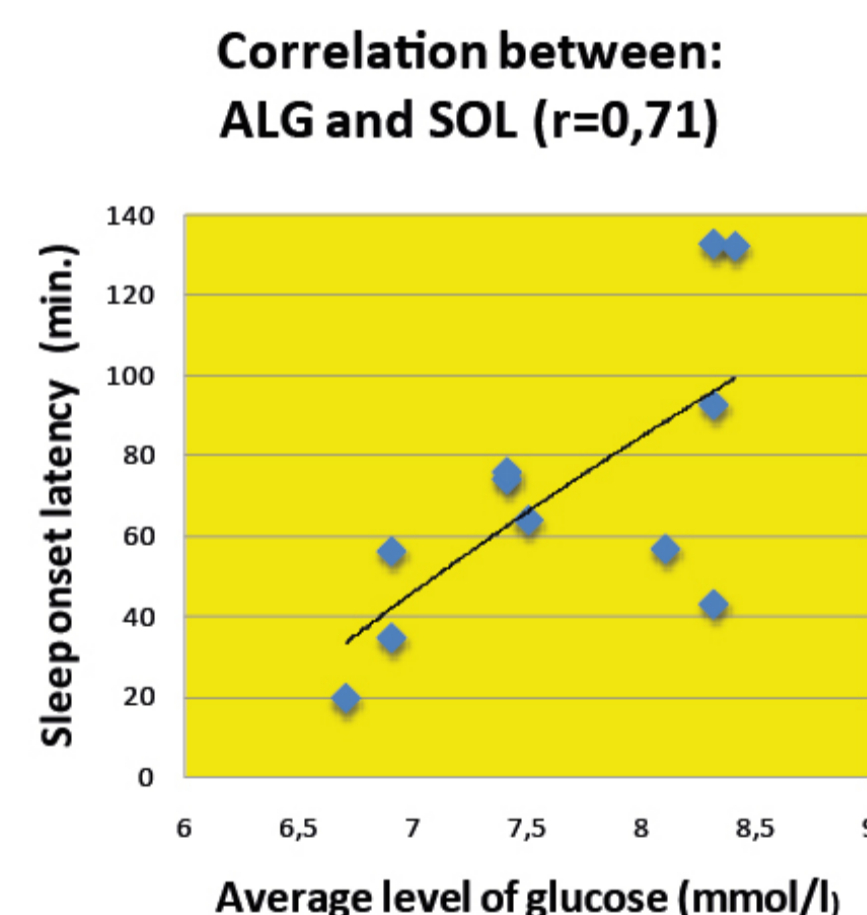
In group A:

a significant direct correlation between:

- ALG and SOL ($r=0.71$);
- the duration of hyperglycemia during a day (%) and the latency of REM-sleep phase ($r=0.76$);

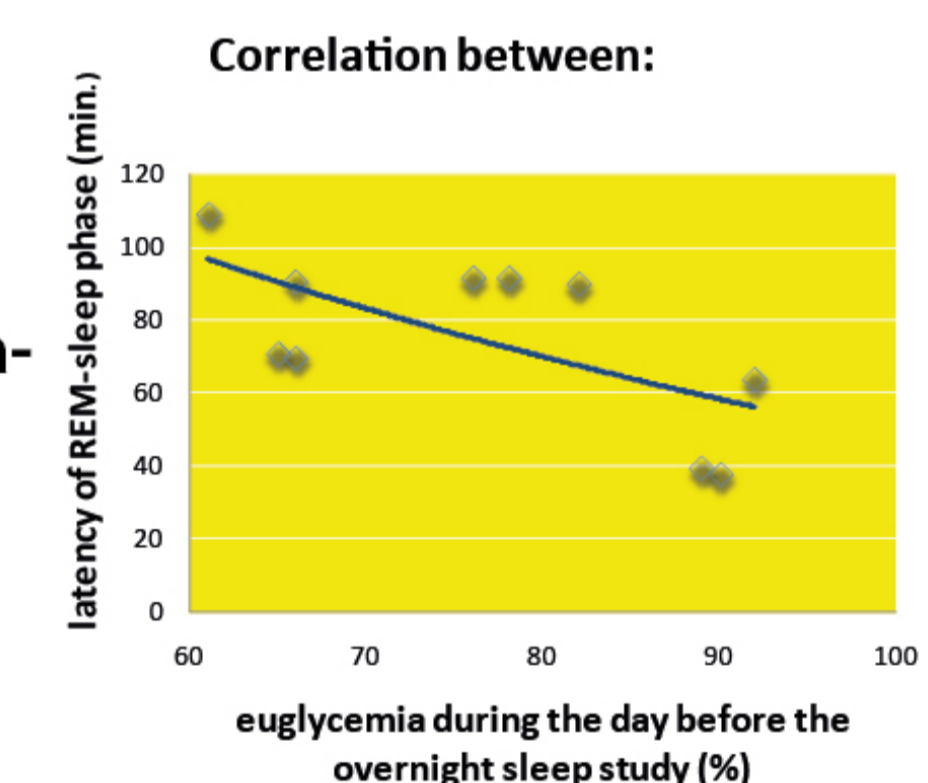
In group B:

- a direct correlation between the ALG and the total sleep time ($r = 0.83$),
 - efficiency of sleep phase 1 ($r=0.85$) and efficiency of sleep phase 2 ($r=0.85$);
- all $p < 0.05$

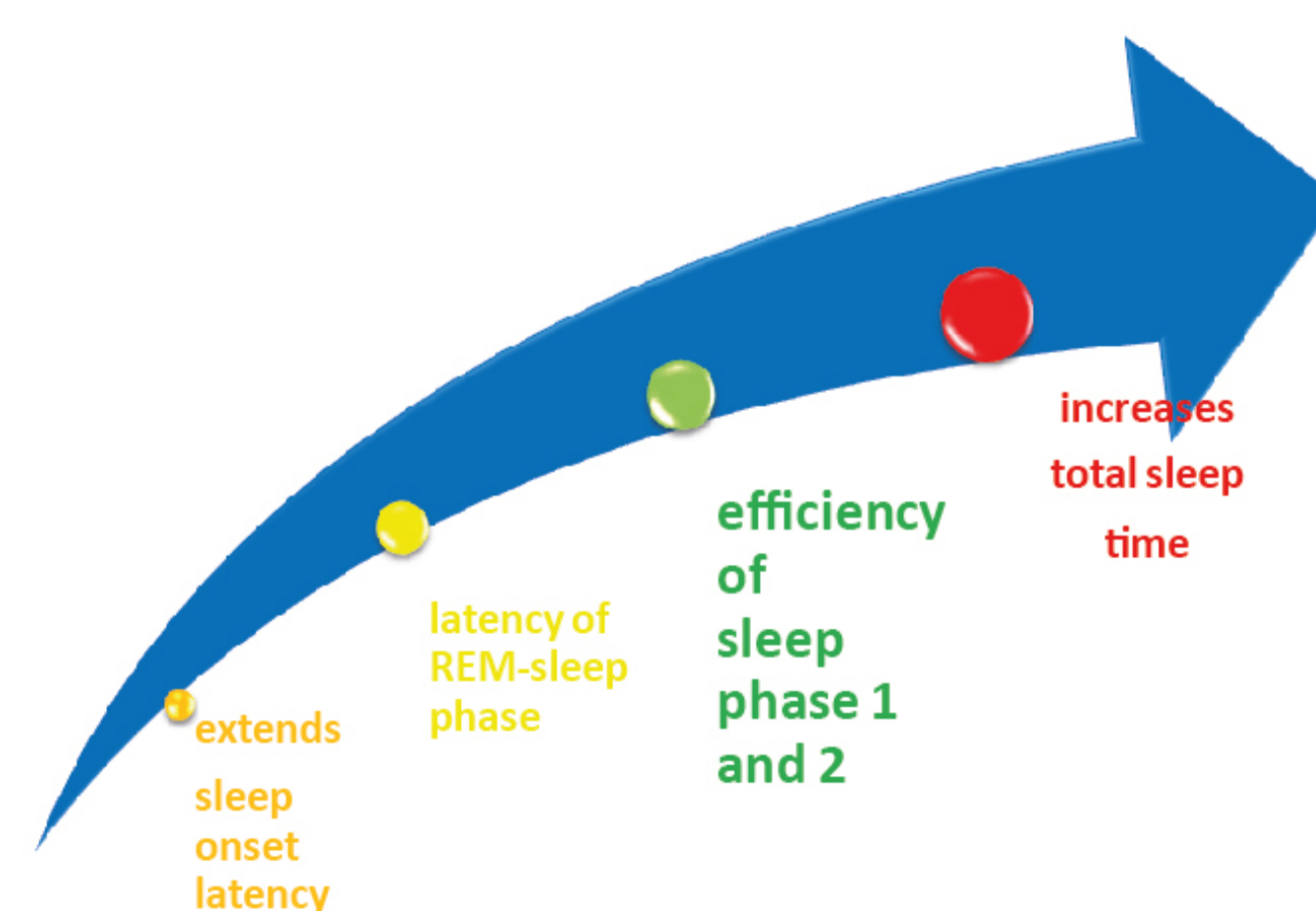


negative correlation between:

- the duration of euglycemia during the day before the overnight sleep study (%) and the latency of REM-sleep phase ($r=-0.79$);
 - between HbA1c Sleep latency and ($r=-0.89$).
- all $p < 0.05$



DAILY VALUE OF GLYCEMIA AFFECTS



CONCLUSIONS

- Daily value of glycemia affects on performance of the upcoming night sleep in patients with T1DM during decompensation period.
- ALG value > 8.3 mmol/l increases total sleep time, the efficiency of sleep phase 1 and 2.
- The increase of ALG extends SOL and the latency of REM-sleep phase.
- The duration of euglycemia during the day reduces latency of REM-sleep phase.