

Changes in Glycemic Control after switching from NPH & RI to Insulin glargine & Lispro in Children with Type 1 Diabetes Mellitus(T1DM)

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Background: It has been reported that glycemic control gets better in children with T1DM on insulin glargine and lispro when compared to patients on NPH and RI. This study was conducted to see the changes of glycemic control after switching from insulin glargine and lispro (GLAR/LIS) to NPH and RI (NPH/RI) in Korean children with T1DM.

Materials & Method: We studied 14 patients who were diagnosed with T1DM in Kyungpook National Children's Hospital, and who switched insulin from NPH/RI to GLAR/LIS. HbA1c, body mass index(BMI), insulin requirement, self-monitoring blood glucose and frequency of hypoglycemic episodes were compared between the two periods which were on NPH/RI or GLAR/LIS for one year before and after switching insulin. Their medical records were reviewed retrospectively.

N=14	Before 12 month	when change to GLAR/LIS treatment	After 12 months	p-value
HbA1c (%)	8.0 ± 1.92	8.5 ± 1.72	8.3 ± 1.87	0.575
BMI (kg/m ²)	22.8 ± 6.89	23.3 ± 6.73	24.1 ± 6.45	0.300
Insulin (IU/kg)	1.03 ± 0.49	1.17 ± 0.51	1.26 ± 0.48	0.168

Table 1. This table shows the difference in HbA1c, BMI and insulin dose before and after 12 months of treatment, based on the time of change to GLAR/LIS.

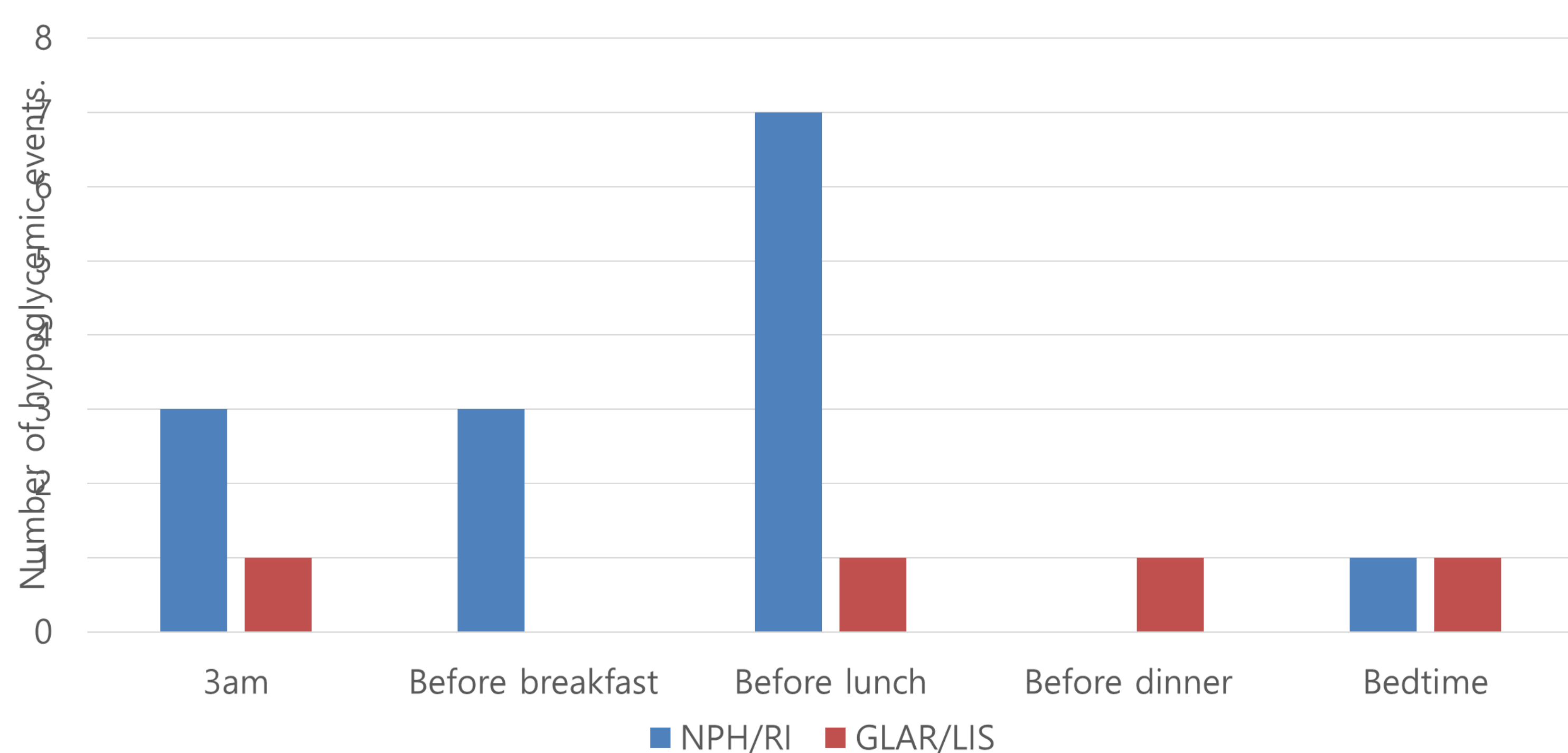


Figure 2. This figure shows frequency of hypoglycemic episodes during in the NPH/RI(20%) and GLAR/LIS(6.7%) treatment.

Results: Change of HbA1c was not significant when compared NPH/RI to GLAR/LIS period (8.5 ± 1.72 vs $8.3 \pm 1.87\%$, $p=0.575$). BMI (kg/m²) and insulin requirement (IU/kg) were significant neither (23.3 ± 6.73 vs 24.1 ± 6.45 , and 1.17 ± 0.51 vs 1.26 ± 0.48 , $p=0.300$ and $p=0.168$)(Table 1). Self-monitoring blood glucose (mg/dL) for one month before and after switching insulins showed significant changes in morning and evening fasting blood glucose (191.07 ± 88.47 vs 107.07 ± 89.86 , $p=0.024$, and 175.83 ± 47.75 vs 122.07 ± 58.51 , $p=0.020$, respectively) (Figure 1). The range of deviation of self-monitoring blood glucose at 3:00 AM and morning fasting time tends to be more narrow in the GLAR / LIS period (Figure 1). The frequency of hypoglycemic episodes were significantly higher in the NPH/RI period compared to GLAR/LIS period (20% vs.6.7%, respectively, $p<0.05$).

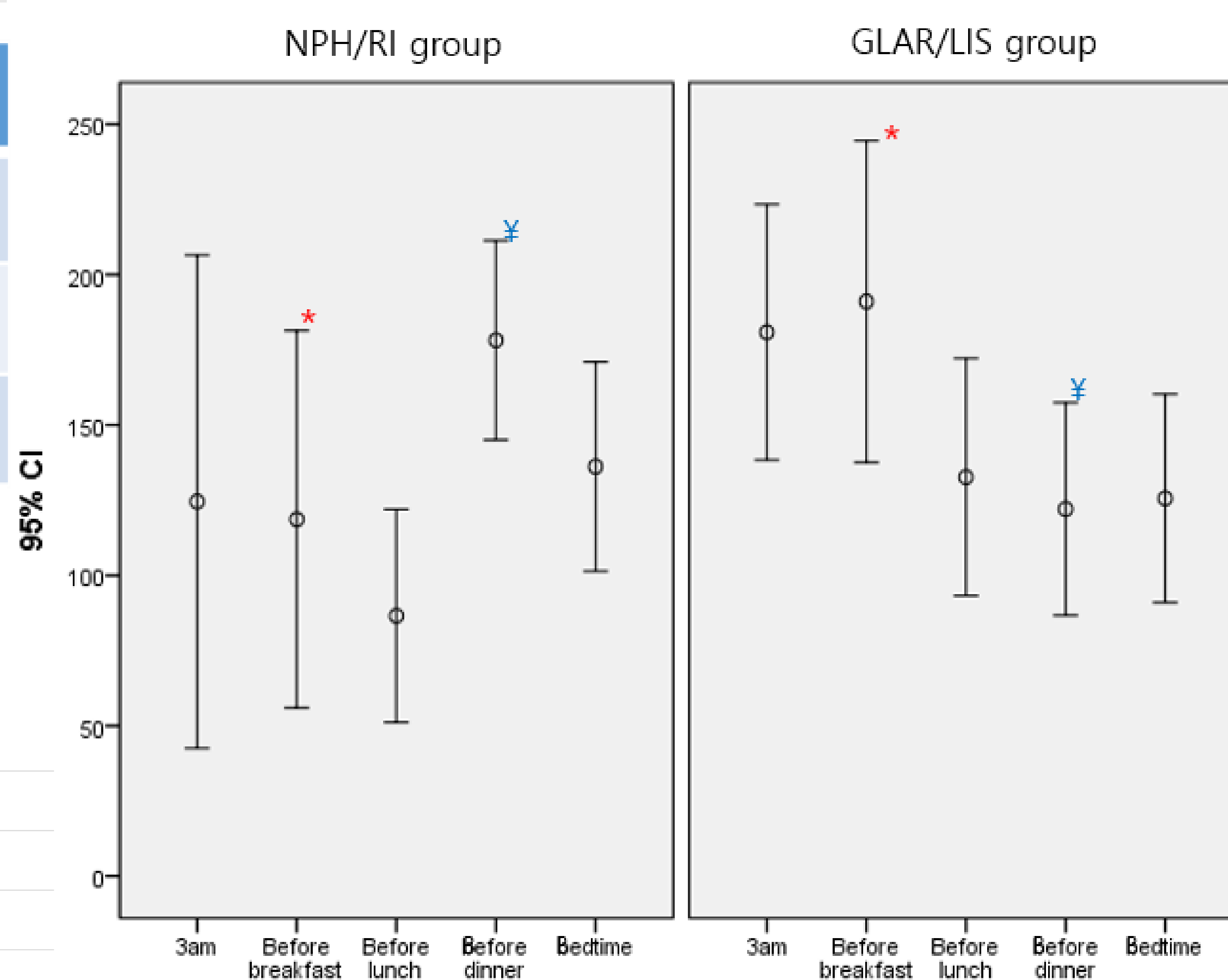


Figure 1. This figure shows comparison to self-monitoring blood glucose according to NPH/RI and GLAR/LIS treatment.

Conclusions: Unlike the previous reports, there was no significant change in HbA1c, body mass index and insulin requirement in GLA/LIS period. However, the frequency of hypoglycemic episodes were lower in GLAR/LIS period. Further large-scaled studies are necessary.

