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.

Results: Change of HbA1c was not significant when compared NPH/RI to GLAR/LIS period (8.5±1.72 vs 8.3±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).

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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.