Basal Insulin Requirements on Continuous Subcutaneous Insulin Infusion During the First 12 Months After Diagnosis of Type 1 Diabetes Mellitus

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Abstract

Introduction:

While the endogenous first-phase insulin response has disappeared by the time of diagnosis of type 1 diabetes mellitus (T1DM), anecdotal evidence suggests that these patients can continue to have a second-phase insulin response during the first 12 months after diagnosis. We hypothesized that patients who are started on continuous subcutaneous insulin infusion (CSII) at the time of diagnosis of T1DM would have a lower basal insulin requirement than the 40–60% usually expected.

Methods:

We analyzed 38 patients with T1DM, age 9.9 ± 6.4 years, 71% male, who were started on CSII within the first month of diagnosis.

Results:

Average basal insulin requirements were 47–49% of total daily dose during the first 12 months after diagnosis and decreased from 0.30 U/kg/day at diagnosis to 0.20 U/kg/day by 12 months. Baseline percentage of basal insulin was significantly correlated with hemoglobin A1c at baseline and at six months. The percentage of basal insulin requirement at 12 months after diagnosis was significantly correlated with baseline body mass index (BMI) and current BMI. No other correlations between percentage of basal insulin requirements and any other factors were seen.

Conclusion:

Our data suggest that, even though some endogenous insulin production remains during the first year after diagnosis of T1DM, the distribution of basal versus total daily insulin requirements remains the same as in the general population of people with diabetes. There may be benefits to starting patients on a higher basal rate at time of diagnosis for overall glycemic control during the first six months. Further research is needed to optimize starting insulin doses to maximize their potential in preserving beta-cell function.

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