Our protocol for IV insulin therapy proved to be appropriate for adequate glycemic control in pediatric patients with T1D during intercurrent illness and surgery” Thiele et al (2019).

Abstract:

OBJECTIVE: Continuous intravenous (IV) insulin infusion therapy minimizes blood glucose (BG) fluctuations and prevents metabolic deterioration in pediatric patients with type 1 diabetes (T1D) during intercurrent illness and surgery. However, data on the adequate fluid and insulin substitution in this situation is rare. We evaluated the effectiveness and safety of IV insulin therapy according to our local protocol.

RESEARCH DESIGN AND METHODS: Retrospective study of 124 cases of hospitalization with IV insulin therapy due to intercurrent illness (n=78) or minor surgery (n=46) in 62 patients with T1D (mean age: 9.6±5.4 years). The patients received a glucose-electrolyte infusion and short acting insulin (normal insulin). Infusion rate was adapted according to the BG measured hourly. Glycemic control was analyzed in subgroups subdivided by age, glycated hemoglobin (HbA1c) and reason for hospitalization.

RESULTS: Mean infusion time was 22h (range 1.5-147h). In 65% of the infusion time, patients’ BG was within the target range (4-8mmol/l). Critical events (BG <3 or >15mmol/l) were found in 6% of the infusion time. Comparison of glycemic control in subgroups for HbA1c and the reason for hospitalization revealed no significant differences. However, patients aged <12 years exhibited significant more critical events, primarily hypoglycemia compared to adolescents (hypoglycemia/case 2.4±pm;2.7 vs. 0.9±pm;2.0; P<0.001).

CONCLUSIONS: Our protocol for IV insulin therapy proved to be appropriate for adequate glycemic control in pediatric patients with T1D during intercurrent illness and surgery. However, the regime seems to be more suitable in adolescents. We adapted our protocol in younger patients with reduction of the insulin dose.

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