

TITLE: Hybrid therapy in youth with type 1 diabetes - continuous subcutaneous insulin infusion (CSII) combined with long-acting insulin: a real-life experience

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ABSTRACT (up to 300 words)

Background The utilization of CSII in type 1 diabetes (T1D) is associated with increased risk of diabetic ketoacidosis (DKA). The rationale behind using hybrid modality, long-acting insulin for basal coverage and CSII for boluses, is the prevention of insulin delivery failure and subsequent hyperglycemia and DKA.

Aims To explore the hybrid treatment modality in clinical practice in youth with T1D.

Methods Multicenter, observational study of youth with T1D who initiated hybrid modality between 2013 and 2020. Extracted from the medical records were data on sociodemographic characteristics, reason for hybrid treatment initiation, glycemic metrics of 2 weeks, HbA1c and frequency of DKA episodes, collected at initiation (last 6 months), after 6 months, and at last visit.

Results Fifty-five patients (52.7% males) were treated with hybrid therapy, median age at initiation 14.5 [IQR 12.4, 17.3] years, HbA1c 9.2 [IQR 8.2, 10.2], mean glucose levels 221 mg/dL [IQR 181, 226] and treatment duration 18 [IQR 12, 47] months. Hybrid treatment was initiated due to fear of sustained hyperglycemia in 41.8%, DKA episodes in 30.8%, refusal to use CSII continuously in 14.6%. HbA1c did not change significantly throughout follow-up ($P=0.262$). Mean glucose levels decreased after 6 months ($P=0.034$), and remained stable thereafter ($P=0.274, p=0.641$). Frequency of DKA

decreased after 6 months (4 events/4 patients), and at end of follow up (10/10), compared with baseline (24/14) ($P=0.002$, $P=0.031$).

Conclusions

Our findings suggest that this hybrid therapy is a feasible option in the management of youth with T1D, which may reduce the risk of DKA episodes.

BIOGRAPHY (up to 200 words)

Prof. Marianna Rachmiel has completed her MD during 1995, age 25 years, from Tel Aviv University, Israel. She has completed with excellency Pediatrics residency at Assaf Haroffeh Medical center, during 2004, and a Pediatric Endocrinology fellowship at SickKids, University of Toronto, Canada. She is the head of Pediatric Endocrinology and Diabetes Institute at Shamir (Assaf Haroffeh) Medical Center, Israel. She has nearly 90 publications that have been cited extensively. She takes part mainly in clinical real life studies.