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7 UPDATE ON THE ARTIFICIAL PANCREAS HYBRID CLOSED LOOP: A 10-DAY INITIATION PROTOCOL OF ADVANCED HYBRID CLOSED LOOP SYSTEM IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES, PREVIOUSLY TREATED WITH MULTIPLE DAILY INJECTIONS

Goran Petrovski. *Department of Pediatric Medicine, Division of Endocrinology and Diabetes, Sidra Medicine, Education City North Campus, Doha, Qatar*

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Introduction Advanced Hybrid Closed Loop (AHCL) systems provide superior glycemic control in children and adolescents with Type 1 Diabetes (T1D). Current studies included participants with previous pump and Continuous Glucose Monitoring (CGM) experience.

Objectives We aimed to study transitioning these patients on Multiple Daily Injections (MDI) without prior pump experience to AHCL systems within a short period, utilizing a structured initiation protocol and the glycemic control they achieved with the MiniMed 780G system.

Methods Children and adolescents (aged 7–17 years) with T1D on MDI therapy and HbA1c below 12.5% were recruited in this prospective open label single-arm, single-center study. All participants followed a structured initiation protocol including 4 steps: step 1: AHCL system assessment (1 hour discussion with educator); step 2: AHCL system training (2-hours sessions in 4 consecutive days with groups of 2 to 3 participants and caregivers); step 3: SAP use for 3 days; step 4: AHCL system use for 12 weeks, cumulating in 10 days from MDI to AHCL initiation. The primary outcome of the study was the change in the time spent in the target in range (TIR) of 70–180 mg/dl and HbA1c from baseline (MDI + CGM, 1 week) to study phase (AHCL, 12 weeks).

Results 34 participants were recruited and all of them completed the 12 weeks study. TIR increased from 42.1±18.7% at baseline to 78.8 ±6.1% in the study phase ($p<0.001$). HbA1c decreased from 8.6±1.7% (70±18.6 mmol/mol) at baseline, to 6.5±0.7% (48±7.7 mmol/mol) at the end of the study ($p=0.001$). The participants used the sensor for a median of 96% of the time and spent a median of 90% in AHCL during the 12 weeks. No episodes of severe hypoglycemia or DKA were reported.

Conclusions Children and adolescents with T1D on MDI therapy who initiated the AHCL system following a 10-days structured protocol achieved the internationally recommended goals of glycemic control with TIR >70% and a HbA1c of <7%.

8 MONOGENIC DIABETES; AN UPDATE ON DIAGNOSIS AND MANAGEMENT

Abdelhadi Habeb. *Maternity and Children Hospital and Prince Mohammed bin Abdulaziz Hospital, Madinah, KSA*

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Although the majority of children with diabetes have type 1 other forms of childhood diabetes do exist. Following the rising epidemic of childhood obesity pediatricians started to see more cases of type 2 diabetes and advances in molecular genetics led to identifying some children with diabetes due to single gene defects, the so called monogenic diabetes. In addition, with the increase in the survival rate of children with cancer and other chronic illnesses cases of secondary diabetes became more prevalent.

The importance of making the correct classification of childhood diabetes are numerous: It could guide the best treatment for diabetes, define the diagnosis in other family members and explain other associated feature. However, if not sure it is safer to treat any child with diabetes as type 1.

The presentation will discuss when type 1 diabetes is unlikely and provide clinical examples of different forms of non-type 1 diabetes with more focus on monogenic diabetes.

9 MONOGENIC DIABETES: THE PALESTINIAN EXPERIENCE

Abdulsalam Abu-Libdeh. *Assistant Professor – Al Quds Medical School; Makassed Islamic Hospital and Hadassah University Hospital – Jerusalem, Palestine*

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Introduction Monogenic diabetes is a type of diabetes resulting from mutations of a single gene that may be spontaneous de novo or autosomal dominant or recessive. Reported incidence is 1–4% and confirmed by molecular genetic testing. Transient neonatal diabetes is usually diagnosed within the first week of life and resolves around 12 weeks. Permanent neonatal diabetes should be considered in all children presenting with diabetes in first month of age, and do not resolve. Genetic diagnosis may have major effects on treatment.

Objective To determine the genetic mutation pattern of suspected cases of monogenic diabetes in patients referred to Makassed Hospital in Jerusalem.

Methods Molecular detection has been done for those infants who were fulfilling the following criterion:

Infants with diabetes both transient (**TNDM**) and permanent neonatal diabetes (**PNDM**), Infants with diabetes diagnosed between 6 and 12 months of age and negative antibodies, Infants with diabetes associated with extra pancreatic features, Infants with diabetes presenting before 6 months of age as type 1 diabetes.

Results Patients were evaluated at Makassed Hospital, underwent genetic testing and revealed 10 novel mutations, 3 with previously described mutations and another 2patients without final genetic diagnosis.

Conclusion Monogenic diabetes is not very uncommon, higher rate of consanguinity predicts higher risk and is often misdiagnosed as type 1 or type 2 diabetes.

Diabetes diagnosed before 6 months of age will be monogenic diabetes and the underlying gene mutations can be identified in most of the cases, guiding the most appropriate management for patients.

This will enable genetic counselling, correcting the diagnosis of other family member & explain other associated features; predict the clinical course of the disease.