pediatric hospital in Vancouver, British Columbia, Canada. Data was collected from the BCCH paper and electronic health records. CKD was defined as eGFR less than 60 mL/min/1.73 m^2. Being at risk of CKD was defined as having a mildly decreased eGFR (60-<90 mL/min/1.73 m^2) and/or hyperfiltration (eGFR ≥140 mL/min/1.73 m^2). eGFR was calculated using the modified Schwartz formula (36.5 x height in cm / serum creatinine in µmol/L). Linear regression analysis was used to describe the relationship between eGFR and duration of T1D. Covariates included in the analysis included sex, history of DKA, A1c, and BMI. **Results:** Of the 420 participants, 225 (54%) were male, with a median age at T1D diagnosis of 6.1 years and T1D duration of 4.8 years (range <1.0–15.0 years). One-hundred and eighty-six (44%) children were hospitalized for DKA, of which 89 (48%) developed AKI. No participants had an eGFR < 60 ml/min/1.73m^2, and 317 (76%) had normal renal function. Fifty-one participants (12%) had an eGFR < 90 ml/min/1.73 m^2, and 52 (12%) demonstrated hyperfiltration. When analyzed as a cohort cross-sectionally based on duration of T1D, there was a significant linear decline in eGFR of 1.4 ml/min/1.73 m^2 per year (95% CI -1.95, -0.87 ml/min/1.73 m^2). **Conclusion:** In a large group of pediatric patients with type 1 diabetes, 24% were at risk for chronic kidney disease based on a mildly decreased GFR and/or hyperfiltration. The pattern of eGFR decline over time is concerning and relevant, as this cohort is at risk for CKD secondary to diabetic kidney disease. Strategies are needed to improve the follow-up and management of early CKD in children with type 1 diabetes to maintain their renal function into adulthood, and more studies are needed to quantify further change in eGFR in the young adult population.

Diabetes Mellitus and Glucose Metabolism

TYPE 1 DIABETES

Dipeptidyl Peptidase-4 (DPP-4) Inhibitor Therapy in the Management of Latent Autoimmune Diabetes in Adults (LADA): A Systematic Review and Meta Analysis

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Objective: Latent autoimmune diabetes in adults (LADA) has been shown in recent studies to have heterogeneous pathophysiology and phenotype. Although insulin is considered as the therapeutic choice for these patients, other antidiabetic drugs have been studied in terms of glycemic control and beta cell function preservation. In particular, dipeptidyl peptidase-4 (DPP-4) inhibitors have shown immunomodulatory effects in animal models since it was demonstrated a higher DPP-4 activity in patients with LADA compared to patients with Type 1 and Type 2 diabetes suggesting a possible effect on autoimmunity found in LADA. This study aims to review the outcomes of the included studies and evaluate the efficacy of DPP-4 inhibitors in the treatment of LADA. **Methods:** We searched Medline, Embase, PubMed and Cochrane Library Databases and ClinicalTrials.gov for studies concerning the use of DPP4 inhibitors in patients with latent autoimmune diabetes in adults (LADA). **Results:** Preclinical studies demonstrated drug's immunomodulatory effects in terms of suppression of inflammatory processes and oxidative stress providing endothelial protection leading to improved metabolic control and prevention of vasculopathy. From this meta-analysis, pooled data from 8 randomized controlled trials revealed that the use of DPP-4 inhibitors in LADA patients resulted in an improved glycemic control, decreased insulin requirement and increased beta cell function as assessed by a decrease in GADA titers, increased C peptide levels and HOMA B. **Conclusion:** Beneficial effects of DPP4 inhibitors are shown by the included studies indicating that they are promising therapeutic agents for patients with LADA. However, caution should still be exercised since there is still much to learn about the disease itself and larger scale prospective randomized trials are needed to assess the efficacy and safety of DPP4 inhibitors for these patients.

Diabetes Mellitus and Glucose Metabolism

TYPE 1 DIABETES

Effects of Treatment With Continuous Subcutaneous Insulin Infusion on Arterial Stiffness and Endothelial Glycocalyx Compared to MDI Intensification in Patients With Type 1 Diabetes: Improvement After a Six-Month Pump Treatment.

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Patients with type 1 diabetes mellitus (T1DM) present signs of atherosclerosis and endothelial dysfunction earlier compared to healthy individuals. The evidence regarding the efficacy of continuous subcutaneous insulin infusion (CSII) in vascular function in T1DM are scarce. The aim of this study is to determine whether insulin intensification with CSII improves arterial stiffness and endothelial function in T1DM compared to multiple daily insulin (MDI) injections. Thirty patients with T1DM were included in our study. Fifteen patients with poor glycemic control were transitioned from MDI to CSII and were reviewed immediately prior (baseline) and six months after the initiation of CSII. Fifteen patients, matched for sex, age and glycemic control, remained on intensified treatment with MDI

(control group). In all patients at each visit we measure a) Carotid-femoral PWV b) central systolic blood pressure (cSBP) c) perfused boundary region (PBR) of the sublingual arterial microvessels. Both groups had similar cardiovascular markers and HbA1c at baseline (p>0.05). After a six month treatment period, patients on CSII improved HbA1c (7.9±1.5% vs 7.35±0.7%, p<0.05), PBR (2.1±0.2 vs. 2±0.2 μm, p<0.05), PWV (7.5±0.3 vs. 7.4±1.1m/s, p<0,05) and cSBP (114.6±12.5 vs. 112±5.4 mmHg, p<0.05). There were no statistically significant differences in PBR (2±0.3 vs. 2±0.3 μm, p>0.05), PWV (8±2.3 vs. 8±1.9m/s, p>0.05) and cSBP (115±15.2 vs. 115.7±15.4 mmHg, p>0.05) in patients who remained on MDI, despite improvement of HbA1c (8±1.1% vs 7.36±0.8%, p<0.05). The use of CSII improves the thickness of endothelial glycocalyx and decreases arterial stiffness after six months treatment in patients with T1DM.

Diabetes Mellitus and Glucose Metabolism

TYPE 1 DIABETES

Hypothalamic Gliosis in Adolescents With Type 1 Diabetes and Disordered Eating Behaviors

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Background: The hypothalamus and brainstem are thought to be the principal homeostatic brain areas responsible for regulating appetite and weight. Research suggests that inflammation plays a role in the onset and maintenance of eating-related maladaptive behaviors. Hypothalamic inflammation and reactive gliosis mediate disruptions in energy homeostasis, especially with obesity. Data from SEARCH in Youth for Diabetes has demonstrated high prevalence of disordered eating behaviors (DEB) including insulin omission and binge eating, in individuals with type 1 diabetes (T1D). Limited studies have used neuroimaging techniques for investigation of hypothalamic gliosis in individuals with T1D and DEB.
Objectives: To determine the feasibility of assessing hypothalamic gliosis with structural MRI in adolescents with T1D with and without DEB.
Research Design and Methods: Adolescents with T1D with and without DEB, aged 13–19, were invited to participate. Participants with current use of medications known to alter appetite were excluded. They completed the Diabetes Eating Problem Survey - Revised (DEPS-R). A score ≥ 20 was indicative of DEB. Height, weight and waist circumference were obtained, and BMI was calculated. HbA1c was obtained from their prior clinic visit, within 2 months of the study visit. Basal insulin (glargine) was administered the night before, and participants on insulin pump continued with their basal insulin infusion. Participants received rapid-acting insulin prior to the MRI study, and blood glucoses were measured before and after the MRI. Mediobasal hypothalamic (MBH) gliosis was measured by T2 relaxation time.
Results: Eight subjects (50% female, mean age 17.8±2.3 years) have completed the study without adverse outcomes. Mean HbA1c was 8.5% (range 7.3–10%). Five subjects screened positive for DEB. There was no significant difference in BMI between DEB and non-DEB groups. In this cohort, females had longer T2 relaxation times in left MBH than males (p=0.035). Compared to non-DEB group, participants with DEB had longer T2 relaxation time in left MBH, adjusted for sex and age (p=0.001). In this initial sample, relationships between MBH T2 relaxation times and glycemic control, BMI or waist circumference did not emerge.
Conclusion: The study protocol with insulin injection and MRI to study the hypothalamic gliosis in individuals with T1D is feasible. Structural MRI indicates increased T2 relaxation times as a marker of hypothalamic gliosis in participants with DEB. Further studies with larger sample size are crucial to validate these findings and to study specific eating behaviors and their associations with MBH gliosis in individuals with T1D.

Diabetes Mellitus and Glucose Metabolism

TYPE 1 DIABETES

Improving Care Delivery for Young Adults With Type 1 Diabetes via a Multi-Faceted Quality Improvement Interdisciplinary Intervention

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Background: The transition from pediatric to adult type 1 diabetes (TID) care represents a vulnerable period for young adults (YA), and many are eventually lost to follow up. This can result in lost opportunities for patient education, worsened glycemic control and increased rates of acute diabetes complications. To address this, a multi-faceted quality improvement (QI) intervention was implemented at a YA T1D program with the goal of improving patient attendance and care delivery amongst YA with T1D.
Methods: The intervention consisted of three main components: a transitional navigator, an interdisciplinary diabetes assessment flowsheet and virtual care via phone or video conference. These components were implemented at the YA T1D program using a stepwise approach beginning in 2019. The attendance of all patients seen between January 2017 and August 2020 were tracked monthly on a run chart to identify any shifts after each component was implemented. A pre-post analysis was also performed in new patients with a minimum follow up period of 12 months to compare secondary outcomes including A1c reduction at 12 months, incidence of diabetes-related ED visits/hospitalizations, incidence of severe hypoglycemia and psychosocial counselling rates.
Results: A total of 2240 scheduled appointments was included in the primary analysis. Patient attendance improved from 59% to 79% (p<0.01) with virtual care, demonstrated by a shift in attendance sustained over 6 months after its implementation. Virtual care was utilized in 81.3% of appointments in the post-intervention