**Type 1 Diabetes in Children**

**Epidemiology**

Age: Bimodal distribution, one peak at 4-6 years four of age and a second in 10 to 14 years of age with more predisposition in non-Hispanic whites.

**Pathophysiology**

T1DM is characterized primarily by insulin deficiency, from autoimmune destruction of pancreatic beta cells and is referred to as type 1A diabetes. Seen in approximately 85 percent of cases.

Patients with clinical features of T1DM but without detectable autoantibodies are categorized as having type 1B diabetes (approximately 15 percent).

**Genetic susceptibility**

Monozygotic twins>Offspring with both parents affected >Dizygotic twin>Offspring of an affected father >Non-twin sibling of affected patient >Offspring of an affected mother.

**Definitions: Any one of the following 4 criteria can be used (ADA)**

* Fasting plasma glucose **≥126 mg/dL**.
* Random venous plasma glucose ≥200 mg/dL in a patient with classic symptoms of hyperglycemia (i.e polyuria and polydipsia).
* Plasma glucose **≥200 mg/dL** measured two hours after a glucose load of 1.75 g/kg (max-75 g) in an oral glucose tolerance test.
* Hemoglobin A1c **>6.5%** on two separate occasions.

**Symptoms:** Polyuria, nocturia, enuresis, increased thirst, increased appetite, weight loss, fatigue, Vomiting, rapid/deep breathing, abdominal pain may suggest DKA.

**Age based presentation**

* **Infants** — History or presence of prolonged or recurrent candida infection in the diaper area.
* **Young children** — Younger children are more vulnerable to dehydration. DKA is a more common presentation in children <6 years of age.

**Labs**: islet cell antibodies, IA-2 antibodies, insulin antibodies, GAD-65 antibodies, ZnT8 antibodies can be used to confirm the diagnosis in doubtful cases but not required.

 **Differential diagnosis**

* Type 2 Diabetes Mellitus.
* Single genes causing DM – clinically heterogeneous disorder diagnosed at a young age with autosomal dominant transmission and lack of pancreatic autoantibodies.
* Neonatal diabetes is a rare disorder caused by one of several genetic defects in pancreatic development or beta cell function.
* Diseases of the exocrine system such as Cystic fibrosis, Cushing syndrome, and drug-induced diabetes (glucocorticoids, HIV protease inhibitors, immune suppressants and second-generation antipsychotics)

 **Management**

Insulin is the corner store of therapy. The total daily dose of insulin is based on the age, weight, stage of diabetes and the severity of initial presentation. Insulin can be administered by syringes or pump. The use of continuous glucose monitor decreases the need of checking blood sugars with the ability to warn the patient’s family regarding low and high blood sugars.

**Complications**

**Acute**

* Diabetic ketoacidosis

**Chronic**

* Microvascular Complications-Nephropathy, retinopathy and neuropathy. Screening starts at the age ≥10 years/puberty after having diabetes for 3-5 years.
* Macrovascular Complications**-**Hypertension at the time of diagnosis and at every visit. Dyslipidemia-≥10 years, if normal every 3-5 years.

**Comorbidities -**autoimmune thyroiditis, celiac disease.

**References/ Available Resources**

1) American Diabetes Association. Children and Adolescents: Standards of Medical Care in Diabetes-2018. Diabetes Care. 2018;41(Suppl 1): S126