A Case of Type Two Diabetes in Youth

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Abstract

T2DM in youth has widely expanded over the past 20 years with evidence that type 2 diabetes in youth differs from type 2 diabetes in adults, having a rapidly progressive decline in b-cell function and accelerated development of diabetes complications.

Our case presented a 15-year-old diabetic adolescent with childhood syndromic obesity (most probably Alstrom syndrome) treated as a case of T1DM that burdened her with unnecessary multiple daily injections and financial costs that even failed to control her blood sugar.

Conclusion: It is important to be aware of the expanding prevalence of T2DM among youth and adolescents stressing the need for early diagnosis and providing currently approved treatments which are Insulin, Metformin, SGLT2 or GLP1 with target A1C <7 %.

Introduction

The prevalence of type 2 diabetes in youth has widely expanded over the past 20 years.

Evidence has proved that type 2 diabetes in youth is different from type 2 diabetes in adults, unfortunately, it causes a rapid progressive decline in b-cell function and accelerated development of diabetes complications.

The CDC published that the prevalence of T2DM in those under 20 years of age will quadruple in 40 years (1).

Possible risk factors for developing diabetes in adolescent stages are obesity, having an affected close relative, or belonging to a certain race as Non-Hispanic Black, Native American, and Asian, also being peripubertal as puberty increases insulin resistance, most cases of childhood T2DM occur after the onset of puberty, which is a time of physiologic insulin resistance (2).

Adolescents with T2DM present commonly with polyuria, polydipsia, fatigue, and lethargy but approximately 40 percent of patients are asymptomatic at the time of diagnosis.

Its diagnostic criteria resemble those of adults: A1C ≥6.5 percent, FPG ≥126 mg/dL, Plasma glucose ≥200 mg/dL, symptoms of hyperglycemia and random plasma glucose ≥200 mg/dL (3).

The development of T2DM in adolescents puts them at great risk of hyperlipidemia, MAFLD, cardiovascular diseases and metabolic syndrome.

The only approved antidiabetic drugs in adolescents currently are Insulin, Metformin, SGLT2 and GLP1 with target A1C <7 % (4).

Case presentation

Our case is a 15 years old girl who started to gain weight excessively at the age of 8 years with no symptoms suggestive of underlying disease, was diagnosed diabetic at the age of twelve by (FBS: 500 mg/dL, 2hr pp: 700 mg/dL) and started insulin degludec 27u in addition to rapid-acting insulin 25u three times daily.

Her condition was also associated with unexplained deterioration of her vision.

Upon examination: Her blood pressure was 130/80 mmHg, pulse:86, BMI:35.5, waist circumference:112 cm.

Her abdominal examination revealed right lobe of the liver was felt 2 fingers below the costal margin, and the left lobe was felt 3 fingers below the xiphisternum with a rounded border, smooth surface and firm consistency.

The rest of the examination was unremarkable.

Her pelvic-abdominal ultrasound showed a fatty liver (19 cm).

Her labs showed normal CBC, liver and kidney functions apart from microalbuminuria (130mg/dl).

Her FBS was 350 mg/dL, her 2hrpp 410 mg/dL, A1C 7.3, fasting C-peptide 6.03 mg/dl and hence was diagnosed with T2DM and was advised to follow a healthy diet, lifestyle and exercise in addition to Metformin 2gm and total insulin daily dose was gradually reduced from100 units to only 15 units in the form of insulin degludec.

Her FBS dropped to 125 mg/dL and her 2hrpp 175 mg/dL .

Her childhood obesity together with deterioration of vision were attributed most probably to Alstrom syndrome planned to be confirmed by genetic study.

Discussion

Our case presented a 15-year-old adolescent with childhood syndromic obesity (most probably Alstrom syndrome) with obesity being her risk factor that caused the development of diabetes.

The patient was treated as a case of T1DM that burdened her with unnecessary multiple daily injections and financial costs that even failed to control her blood sugar.

It is important to be aware of the expanding prevalence of T2DM among youth and adolescents so that they can receive the appropriate treatment.

Diagnosis of T2DM among that entity of patients follows the same rules as adults. (A1C ≥6.5%, FPG ≥126 mg/dL, Plasma glucose ≥200 mg/dL, Symptoms of hyperglycemia and a random plasma glucose ≥200 mg/dL.)

Our patient's FBS was 350 mg/dL, her 2hrpp 410 mg/dL, A1C 7.3 confirming the diagnosis of diabetes and T1DM was excluded by absent history of DKA and C-peptide levels (6.03 mg/dl).

The only approved antidiabetic drugs in adolescents currently are Insulin, Metformin, SGLT2 and GLP1 with target A1C <7 %, accordingly our patient was advised to follow a healthy diet, lifestyle and exercise in addition to Metformin 2gm and total insulin daily dose was gradually reduced from100 units to only 15 units in the form of insulin degludec followed by drop of her FBS to 125

mg/dL 2hrpp to 175 mg/dL and controlled SMBG.

References

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