Type 2 diabetes in young adults, how important is lifestyle modifications – case presentation

Ivana Mickovski, Daniela Buklioska Ilievska
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Introduction

The obesity pandemic has spared no age group, including young children. Type 2 diabetes mellitus (T2DM), once considered a disease of old age, sadly now occurs not uncommonly in children and young adults. Thus, it is important to optimize treatment using a combination of pharmacological and nonpharmacologic interventions, with close monitoring and follow-up.

Case Presentation

A 21years old obese male presented to the department of Endocrinology, 8TH September City General Hospital, Skopje, for the first time with complaints of high glycaemia (30mmol/l), felling very thirsty, often urinating and blurry vision for 1 month. He was diagnosed as type 1 diabetes mellitus 2-3 days ago in local policlinic and insulin therapy in 4 doses (basal bolus therapy) was prescribed without any improvement. He had a family history of diabetes, high blood pressure and dyslipidemia. He is nonsmoker with no children.

Investigations

Initial investigation showed extremely elevated HgA1c 110.3 mmol/mol (12.2%), high glycaemia (30 mmol/l), glycosuria, elevated cholesterol (7.0 mmol/l), triglyceride (2.8 mmol/l), LDL (3.0). His renal and liver functional test were within normal limits. The tests for thyroid functional were also normal. Because of his weight additional tests were made and type 1 diabetes was ruled out by negative anti-islet antibody test results. He was 170centimetar tall, 107kg weight and his body mass index (BMI) was 37.0. Echotomography showed steatotic liver, echocardiography and ophthalmic tests were normal.

Treatment

Based on clinical and biochemical tests, the patient was diagnosed with T2DM. Because the patient was overweight and his biggest concern was his weight, he also had insulin resistance and many other additional factors, the medical team decided to start the treatment with Metformin (1000mg couple of days and after 2000mg per day) and Liraglutide with gradual titration of the dose (was started at 0.6mg daily subcutaneously for 1 week and then increased to 1.2 mg daily) with additional lifestyle modifications (balancing food and physical activity). (Table 1).

Table 1, Patient's Diabetes Medication Changes over Time

Reference date	Medical change	HgA1c (%) at time of chage	Weight loss /bmi	FPG mmol/l
Date liraglutide was added	Liraglutide 1.2mg +Metformin 2000mg daily	12.2%	107kg 37.0	16.0 mmol/l
1 month on liraglutide	Liraglutide 1.2mg +Metformin 2000mg daily	8.0%	103kg 35.6	4.64 mmol/l
3 months on liraglutide	Liraglutide 1.2mg +Metformin 2000mg daily	5.5%	91kg/ 31.5	4.78 mmol/l
7-8 months on liraglutide	Liraglutide 1.2mg +Metformin 2000mg daily	5%	79kg/ 27.3	4.5 mmol/l
5-6 months after stop taking liraglutide	Metformin 2000mg daily	5.5%	74kg/ 25.6	5.0 mmol/l
1 years after stop taking liraglutide	Metformin 2000mg daily	5.3%	75kg/ 26.0	5.1 mmol/l

Discussion

Metformin monotherapy provided durable glycemic control in only one part of patients. It is therefore important to carefully and frequently monitor these patients and intensify therapy, according to their parameters. Individualizing treatment regimens should be given consideration.
In our case report, we observed that the prevalence of T2DM and metabolic syndrome in young patient was in correlation with a family history of diabetes. In this case presentation, we showed the efficacy of liraglutide, its influence on changes in quality of life (QOL), and the correlations between changes in HbA1c and body weight. Liraglutide therapy decreased HbA1c level and body weights, and improved patient QOL as evidenced.

Conclusion

The goals of managing a young patient with T2DM include the following: 1.to achieve and maintain near normal glycemic control, 2.to improve insulin sensitivity and secretion, which results in improved glycemic control, 3.to identify and treat, if necessary, comorbidities such as hypertension, dyslipidemia, and nonalcoholic fatty liver disease and 4.to prevent the vascular complication of T2DM. Lifestyle modifications to reduce body weight should be initiated in all patients with this disorder, because weight loss reduces insulin resistance and improves insulin secretion.

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Corresponding author assoc.prof Ivana Mickovski
trajkovska.ivana85@gmail.com

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