

# Obesity Treatment Can Also Cure Type 2 Diabetes Mellitus: A Case Report

## Tip 2 Diabetes Mellitusu Olan Obezite Hastasında Obezite Tedavisi Diyabetide Tedavi Edebilir: Bir Olgu Örneği

✉ Feray Akbaş, ✉ Hanife Usta Atmaca

University of Health Sciences Turkey, Istanbul Training and Research Hospital, Clinic of Internal Medicine, Istanbul, Turkey

### ABSTRACT

Obesity is a leading risk factor for type 2 diabetes mellitus (DM). Lifestyle modification should be the first step of diabetes treatment regardless of the medications prescribed upon diagnosis. An obese patient who was diagnosed with type 2 DM during visit at his obesity outpatient clinic was prescribed medication and lifestyle modification. The patient achieved remission of diabetes after losing 25% of weight during the follow-up period. This case emphasizes the importance of lifestyle modification in diabetes treatment.

**Keywords:** Obesity, type 2 diabetes mellitus, lifestyle modification

### ÖZ

Obezite, tip 2 diabetes mellitus (DM) için önde gelen risk faktörüdür. Tanı konduğunda hastaya önerilen medikal diyabet tedavisi ne olursa olsun, yaşam tarzı değişikliği tedavinin birinci basamağını oluşturmaktadır. Burada; obezite polikliniğine başvurusunda tip 2 DM tanısı konan, yaşam tarzı değişikliği ve ilaç tedavisi başlanıp %25 kilo kaybı sonrasında ilaçsız izlemde diyabet kliniği bulunmayan bir olgu ele alınarak, diyabet tedavisinde yaşam tarzı değişikliğinin öneminin bir kez daha vurgulanması amaçlanmıştır.

**Anahtar Kelimeler:** Obezite, tip 2 diabetes mellitus, yaşam tarzı değişikliği

### Introduction

Obesity is the leading risk factor for type 2 diabetes mellitus (DM). Regardless of the medical diabetes treatment suggested to the patient when diagnosed, lifestyle change should be the first step of treatment. In this study, it is aimed to emphasize once again the importance of lifestyle change in the treatment of diabetes by addressing a case who was diagnosed with type 2 DM at the admission to the obesity outpatient clinic, who did not have a diabetes clinic in drug-free follow-up after a 25% weight loss with lifestyle change and medication.

### Case Report

A 34-year-old male patient applied to the obesity outpatient clinic for the first time in February 2016. The patient was a high school graduate, working in the textile industry, and was married. His childhood weight was normal; she started to gain weight after marriage and reached his

highest weight in the last 5 years. He applied to our outpatient clinic because he was at the highest weight in his life and started to have difficulty in movements. His medical history was unremarkable except for tonsillectomy operation. He did not have a diagnosis or a history of drug use that could cause weight gain. He had never attempted to lose weight before. In his family history, there was obesity and type 2 DM in the mother. He did not smoke or drink alcohol.

**Eating habits:** He ate 3 main meals a day, but his biggest meal was dinner. He continued to eat every night at home until he fell asleep, and during daylight hours at work, between meals, and these were usually simple carbohydrates (such as wafers, sweets, cakes, biscuits). There were no signs of eating disorders.

**Physical activity habits:** He was not doing exercises. He was using public transport on his way to work and walked between transport points and home/work.



**Address for Correspondence/Yazışma Adresi:** Feray Akbaş MD, University of Health Sciences Turkey, Istanbul Training and Research Hospital, Clinic of Internal Medicine, Istanbul, Turkey  
Phone: +90 532 621 19 22 E-mail: atlibatur@yahoo.com ORCID ID: orcid.org/0000-0001-5091-9160

**Cite this article as/Atıf:** Akbaş F, Usta Atmaca H. Obesity Treatment Can Also Cure Type 2 Diabetes: A Case Report. İstanbul Med J 2020; 21(Suppl 1): 14-16.

**Received/Geliş Tarihi:** 13.01.2020  
**Accepted/Kabul Tarihi:** 11.04.2020

Psychological status: There were no signs of depression or mood disorder.

Motivational status: The patient wanted to voluntarily participate in a weight loss program and lose weight only for his health, he was motivated.

Physical examination: Height: 174 cm, weight: 112 kg, body mass index (BMI): 37 kg/m<sup>2</sup>, waist circumference: 116 cm, hip circumference: 120 cm. Other physical examination findings were normal except arterial blood pressure with 140/100 mmHg.

Hemogram, routine biochemistry, hemoglobinA1c (HbA1c), 2<sup>nd</sup> hour postprandial blood glucose, hormone profile, then 1 mg dexamethasone suppression test, spot urine protein/creatinine were checked, electrocardiography, echocardiography, 24-hour ambulatory blood pressure monitoring and abdominal ultrasonography were performed.

After the results were evaluated, he was diagnosed with type 2 DM, hypertension (HT) and hyperlipidemia (HL) according to current guidelines (1-3). Drug treatment was started with metformin and olmesartan/thiazide. The patient refused to receive HL therapy. Simultaneously, the patient was given medical nutrition therapy, exercise prescription, and training for behavior change.

Patient made great adjustment to recommendations and came to the doctor and dietician controls regularly. He dropped from 112 kg to 84 kg, giving a total of 28 kg in the 3-year follow-up. When he had 2<sup>nd</sup> degree obesity, BMI decreased to 28 kg/m<sup>2</sup> and this switched him to overweight group (Table 1). HbA1c was 6.2 in May 2016 and was 5.4 in November 2016, and blood pressure was low. Drug treatments were gradually discontinued when the patient was being monitored. With continued lifestyle change, there was no increase in blood sugar (BS), A1c and blood pressure (Table 2). Scheduled last application date: July 2019 and the patient is still in the control program.

Informed consent was obtained from the patient.

## Discussion

Obesity is the main determinant of poor metabolic control in type 2 diabetes. Therefore, prevention and treatment of obesity is of great importance in the management of patients with type 2 diabetes. (4)

5-10% weight loss can lower HbA1c levels, improve cardiovascular risk factors, reduce the use of antihyperglycemic, antihypertensive and lipid-lowering drugs within 1 year, and bring type 2 diabetes into remission within the first 5 years (5,6).

**Table 2. Metabolic changes**

Parameter	First application	Last control
FBS (mg/dL)	126	79
HbA1c (%)	7.5	5.2
TG (mg/dL)	208	67
LDL (mg/dL)	136	92
HDL (mg/dL)	31	47
Insulin (iu/mL)	43.93	4.33
GGT (mg/dL)	59	33

FBS: Fasting blood sugar, HbA1c: hemoglobinA1c, TG: triglyceride, LDL: low-density lipoprotein, HDL: high-density lipoprotein, GGT: gamma-glutamyl transferase

Many studies have shown that the combination of energy-restricted diets and exercise has an additive effect on weight loss. The beneficial metabolic effects of the Mediterranean diet have been identified and may delay the need for antihyperglycemic drug therapy in newly diagnosed type 2 diabetes patients (5,6).

In our patient, after weight loss, the amount of medication used for diabetes and HT was first reduced and then stopped without the need for medication. BS and blood pressure arterial values were normal in follow-up without medication; diabetes and HT went into remission with the continuation of lifestyle changes.

Medical nutrition therapy, physical activity and behavior change constitute the basis of obesity treatment. The first step of type 2 DM treatment is to make these changes and to provide weight loss in patients with obesity/overweight. Permanent lifestyle change is the greatest success in both diabetes and obesity treatment.

## Ethics

**Informed Consent:** Informed consent was obtained from the patient.

**Peer-review:** Externally peer-reviewed.

**Authorship Contributions:** Surgical and Medical Practices - F.A.; Concept - F.A.; Design - F.A.; Data Collection or Processing - F.A., H.U.A.; Analysis or Interpretation - F.A., H.U.A.; Literature Search - F.A., H.U.A.; Writing - F.A., H.U.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

**Table 1. Weight controls of the patient**

Date	02.2016	05.2016	8.2016	11.2016	01.2017	02.2017	04.2017	06.2017
Weight (kg)	112	96	91	88	90	90	91	91
Date	07.2017	10.2017	12.2017	02.2018	05.2018	8.2018	01.2019	07.2019
Weight (kg)	90	94	86	82	82	85	84	84

## References

1. Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care* 1997; 20: 1183-97.
2. Williams B, Mancia G, Spiering W, Rosei EA, Azizi M, Burnier M, et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension: The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH). *Eur Heart J* 2018; 39: 3021-104.
3. Jellinger PS, Smith DA, Mehta AE, Ganda O, Handelsman Y, Rodbard HW, et al. American Association of Clinical Endocrinologists' Guidelines for Management of Dyslipidemia and Prevention of Atherosclerosis: executive summary. *Endocr Pract* 2012; 18: 269-93.
4. Sonmez A, Yumuk V, Haymana C, Demirci I, Barcin C, Kiyıcı S, et al. Impact of Obesity on the Metabolic Control of Type 2 Diabetes: Results of the Turkish Nationwide Survey of Glycemic and Other Metabolic Parameters of Patients with Diabetes Mellitus (TEMDObesity Study). *Obes Facts* 2019; 12: 167-78.
5. Leitner DR, Frühbeck G, Yumuk V, Schindler K, Micic D, Woodward E, et al. Obesity and Type 2 Diabetes: Two Diseases with a Need for Combined Treatment Strategies - EASO Can Lead the Way. *Obes Facts* 2017; 10: 483-92.
6. Dambha-Miller H, Day AJ, Strelitz J, Irving G, Griffin SJ. Behaviour change, weight loss and remission of Type 2 diabetes: a community-based prospective cohort study. *Diabet Med* 2020; 37: 681-8.