

CAN BARIATRIC SURGERY BE A HOPE FOR RESISTANT HYPERTENSION?

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ABSTRACT

Obesity is a common, dangerous disease that can cause serious health problems, and its increasing worldwide prevalence drives toward increased cardiovascular morbidity and mortality. This case report aims to illustrate the relationship between the management of obesity-related disorders, such as resistant hypertension, and the efficiency of bariatric surgery in patients with obesity. A 52-year-old female patient with obesity was admitted to the department of cardiology of our hospital with complaints of resistant hypertension and left ventricular dysfunction. The patient had a history of preeclampsia. During her fifth month of pregnancy, antihypertensive treatment was started on the patient. Although her blood pressure returned to normal after delivery, she applied to the emergency department with complaints of fainting and headache 10 months after delivery. After a detailed examination, the patient was diagnosed with metabolic syndrome due to increasing body mass index, high blood pressure, and insulin resistance. Obesity surgery was recommended to the patient who was using eight different medications due to her existing chronic diseases. After surgery, the body mass index of the patient regressed to normal values, and all anti-hypertensive medications were discontinued. Considering this case, it may be more effective to perform bariatric surgery instead of diet and medical treatment in selected patients with hypertension and other obesity-related diseases.

Keywords: Bariatric surgery, diabetes mellitus, metabolic syndrome, obesity

INTRODUCTION

Obesity is a multifaceted chronic disease defined as having a body mass index (BMI) greater than 30 kg/m², which may lead to additional diseases such as diabetes mellitus and hypertension (1, 2). About 13% of the world's population struggles with obesity and this rate is increasing due to malnutrition and sedentary lifestyles (3). BMI is the most frequently used index for diagnosing obesity and is determined by dividing a person's weight by their height squared (kg/m²) (4). People with a BMI greater than 30 are classified as obese, while those with a BMI greater than 40 or with a BMI of 35 or higher accompanied by obesity-related health conditions are classified as morbidly obese (5, 6). Obesity may cause dyslipidemia, hyperglycemia, and high blood pressure, which are the components of metabolic syndrome (7). These conditions may fail to respond to treatment due to obesity and lead to additional health problems such as

resistant hypertension, type 2 diabetes, and cardiovascular diseases (8). Resistant hypertension is defined as systolic blood pressure over 140 mm Hg and diastolic blood pressure over 90 mm Hg despite the simultaneous use of 3 different antihypertensive drugs taken at the maximum tolerated doses, one of which is a diuretic selected by considering kidney function (9).

This case report aims to present the remission of an obese patient following bariatric surgery as a treatment for resistant hypertension.

CASE REPORT

A 52-year-old female patient with obesity was admitted to the department of cardiology of our hospital with a ten-year history of resistant hypertension and left ventricular dysfunction. She had no previous complaints before being diagnosed with



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preeclampsia in 1999, in the 5th month of her second pregnancy. During this period, her BMI was 31.2 kg/m² and her blood pressure was 200/120 mm Hg. The patient was prescribed nifedipine 10 mg 1x1. In the 36th week of her pregnancy, she underwent an early caesarean section, and the medication was continued three more weeks after delivery until her blood pressure returned to normal. The patient's weight gain continued after delivery. After the endocrinology control examination in the same year, she was diagnosed with metabolic syndrome due to obesity, high insulin resistance, hypercholesterolemia, and resistant hypertension. Metformin 1000 mg 2x1, duloxetine 30 mg 1x1, pantoprazole 40 mg 1x1, and rosuvastatin 10 mg 1x1 were prescribed. Ten months after delivery, the patient presented to the emergency service with severe headaches and fainting. Amlodipine 10 mg 1x1 was prescribed following a five-day follow-up period.

In 2012, the patient was admitted to the cardiology clinic of our hospital, and benidipine hydrochloride 4 mg 1x1 and olmesartan hydrochlorothiazide 20/12.5 mg 1x1 were prescribed. The previous medications were abandoned. Left ventricular dysfunction and mild mitral regurgitation were detected on transthoracic echocardiography (TTE) performed in 2017. The patient was using four hypertension drugs (olmesartan hydrochlorothiazide 40/12.5 mg 1x1, benidipine hydrochloride 4 mg 2x1, bisoprolol 5 mg 1x1, doxazosin 4 mg 1x1) and was being followed up for resistant hypertension. Despite aggressive treatment, the patient's blood pressure was consistently measured higher than 150/100 mm Hg. Additionally, increased left ventricular dysfunction was detected in TTE performed in April 2019. Therefore, bariatric surgery was recommended. During this period, the patient's BMI was 36.3 kg/m². Bariatric surgery took place on 24 April 2019, following an endoscopic examination. Transit bipartition was performed on 26 April 2019. The patient was discharged on the postoperative 3rd day, and all medications were discontinued. After being discharged, the patient was prescribed olmesartan 40 mg 1x1 since her blood pressure was 160/100 mm Hg. On the postoperative 10th day, the patient was prescribed benidipine hydrochloride 4 mg 1x1 and olmesartan hydrochlorothiazide 20/12.5 mg 1x1 and was called for follow-up six months later. The treatment was reduced to a single drug, benidipine hydrochloride 4 mg 1x1, in the 6-month follow-up, and all medication for hypertension were discontinued in the 9-month follow-up since the patient was hypotensive with a blood pressure of 70/40 mm Hg. The patient's BMI was measured as 20.7 kg/m² with a total weight loss of 30 kg during this period (Figure 1). Postoperative TTE and other laboratory results were normal. The patient, who did not use any medication after the operation until September 2021, was prescribed olmesartan 20 mg 1x1 in September due to high blood pressure and headache. Routine follow-ups were recommended for the patient.

DISCUSSION

Obesity and obesity-associated disorders have been posing a serious threat to global health over the last decades



Figure 1: Comparison of the patient's pre/post-bariatric-surgery BMI.

BMI: Body mass index

(10). Resistant hypertension is one of the most prominent comorbidities of obesity and based on the blood pressure threshold of 140/90 mm Hg, resistant hypertension is present in around 14% of obese people (11). Increased adipose tissue and circulating free fatty acids play an important role in the development of hypertension (12). Bariatric surgery was thought as the first option for the treatment of obesity-related hypertension, which may cause sympathetic nervous system stimulation and insulin resistance (13). When evaluating treatment methods for both weight reduction and comorbidity remission after surgery, including hypertension, bariatric surgery was confirmed to be the most efficient treatment for these patients (14). Patients with a BMI of over 40 kg/m² or 35 kg/m² with major comorbidities may benefit from bariatric surgery (15). Our patient's pre-operative BMI was 36.3 kg/m², and she had resistant hypertension, type 2 diabetes mellitus, asthma, and Hashimoto's thyroiditis. Therefore, it was decided that she was suitable for surgery. Bariatric surgical procedures are classified as restrictive, malabsorptive, and mixed operations (16). Obesity and type 2 diabetes mellitus were indications for transit bipartition surgery, which is classified as a mixed operation. This procedure aims weight loss and increased insulin sensitivity. Additionally, increased bile acids and partially digested foods, caused by intestinal bypass, contribute to increased glucose sensitivity (17). The remission rates of comorbidities and complications after surgery vary according to the type of surgery performed (18).

Bariatric surgery has been shown to be superior to other methods in recovery or regression rates of obesity-related

diseases. After bariatric surgery, type 2 diabetes regressed by 73%, hypertension by 63%, hyperlipidemia by 65%, and sleep apnea by 75%, according to a meta-analysis evaluating a mean follow-up of 5 years (19). Without an operation, the mortality rate is 0.28%, while the re-hospitalization rate is 6.5% (19). Complications such as nausea, vomiting, leakage, bleeding, ulcer, vitamin-mineral deficiency, and malnutrition are major reasons for re-hospitalization. Transit bipartition surgery is preferable because it preserves the physiological digestive tract and is associated with less vitamin and mineral malabsorption (19). Our patient, who previously, was on multiple different medications, gradually decreased her medications after the surgery and eventually stopped taking them. This case suggests the question: Could bariatric surgery be a primary solution for obese patients who are suitable for surgery to treat resistant hypertension and cardiovascular complications?

Ethics Committee Approval: N/A

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

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