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Pharmacological Treatment of Obesity

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Commentary

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ABSTRACT

Obesity is a multifactorial disease that has been widespread all over the world for years. It has been affected by genetic factors, environmental factors and various hormonal conditions. It is an important risk factor especially for cardiovascular diseases. The aim of the obesity treatment is to reduce the obesity-related morbidity and mortality risks to a realistic body weight, to provide sufficient and balanced nutrition habits and to increase the quality of life. In order to obesity treatment to be successful, the patient must agree to continue medical treatment and exercise therapy as well as drug treatment and regular health exams and tests.

INTRODUCTION

Adipocytes, the basic cell for obesity, increase in size and/or number in obese individuals. Because of this, obesity is assessed under two groups as hypertrophic and hyperplastic obesity. Hypertrophic obesity (android abdominal obesity) is characterized by enlarged fat cells in obesity. Hypertrophic obesity usually begins in adulthood and is associated with increased cardiovascular risk. They also respond quickly to weight loss practices. Hyperplastic obesity, on the other hand, increases in the number of adipocyte cells, but also in childhood or adolescence, differently from hypertrophic obesity. These people may have difficulty in weight loss with non-surgical practices [1].

Protection is essential before obesity occurs. Obsessive prevention should begin in childhood. Childhood and adolescent obesity paves the way for adulthood obesity. For this reason, family, school and environment should be informed about adequate and balanced nutrition and physical activity. Obesity treatment is a necessary, long and continuous process that requires the individual's determination and effective participation. The fact that many factors are effective in the etiology of obesity makes prevention and treatment of this disease extremely difficult and complicated. For this reason, a team consisting of physicians, dietitians, psychologists and physiotherapists is needed in the treatment of obesity [2].

The aim of obesity treatment is to reduce obesity related morbidity and mortality risks by aiming at a realistic loss of body weight, to provide adequate and balanced nutrition habits and to increase quality of life. A 10% reduction in body weight over a six-month period provides important benefits in preventing obesity-induced health problems [2].

The methods used in obesity treatment are divided into 5 groups. These methods include;

1. Medical nutrition (diet) treatment
2. Exercise
3. Behavior modification therapy
4. Pharmacological treatment
5. Surgical treatment

Pharmacological Treatment

Despite the many attempts to reduce body weight, drug treatment of obesity has become an important health issue [3-6].

Indications for pharmacological treatment in obesity;

1. BMI (Body Mass İndex) ≥ 30 kg/m^2, and weight control is not achieved when dietary; exercise and behavior modification applications are tried.

2. Patients with a BMI of 27-29.9 kg/m^2 with comorbidities (Type 2 diabetes, coronary artery disease, cerebrovascular disease, hypertension, dyslipidemia).

3. BMI 25-29.9 kg / m^2, waist circumference; 102 cm in men, 88 cm or more in women.

Main drug groups used in obesity treatment; centrally acting drugs that reduce nutrient uptake, peripherally impaired food absorption, and medications that increase energy expenditure **(Table 1)** [7-10].

Table 1. Anti-obesity medications.

Drug	Administration	Mechanism of action	Contraindications	Adverse Event	Warnings
Orlistat	120-mg capsule three times a day with each main meal containing fat (during or up to 1 hour after the meal).	Gastrointestinal lipase inhibitor	Cholestasis or Malabsorption syndrome	Oily Spotting, Flatus with Discharge, Fecal Urgency, Fatty/Oily Stool, Oily Evacuation, Increased Defecation, Fecal Incontinence	Malabsorption of fat-soluble vitamins
Phentermine	One capsule at approximately 2 hours after breakfast for appetite control.15 mg or 37.5 mg orally once daily; 8 mg orally 2–3 times daily; can start with a quarter or a half of a 37.5 mg tablet once daily and titrate upwards to a maximum dosage of 37.5 mg	Sympathomimetic amine	Uncontrolled hypertension, Cardiovascular disease, agitated states, hyperthyroidism, history of drug use, glaucoma or MAOI use within 14 days	Palpitation, tachycardia, elevation of blood pressure. Overstimulation, restlessness, dizziness, insomnia, euphoria, dysphoria, tremor, headache, Dryness of the mouth, unpleasant taste, diarrhea, constipation, other gastrointestinal disturbances Urticaria, Impotence, changes in libido.	Tolerance to the anorectic effect usually develops within a few weeks. Phentermine hydrochloride may impair the ability of the patient to engage in potentially hazardous activities such as operating machinery or driving a motor vehicle. Rare cases of primary pulmonary hypertension or serious regurgitant cardiac valvular disease
Phentermine/ topiramate ER	Take Qsymia once daily in the morning with or without food. Start with3.75/23 mg orally once daily for 14 days; increase to 7/46 mg once daily and monthly titration upwards to achieve weight loss; discontinue if <3% weight loss on 11.25/69 mg or <5% weight loss on maximum dose of 15/92 mg after 12 weeks	Combination of sympathomimetic amine, anorectic and ER antiepileptic drug	Glaucoma, hyperthyroidism or MAOI use within 14 days	Paraesthesia, dizziness, dysgeusia, insomnia, constipation, dry mouth.	Fetal Toxicity, Elevation in Heart Rate, Suicidal Behavior and Ideation, Acute Angle Closure Glaucoma, Mood and Sleep Disorders, Cognitive Impairment, Metabolic Acidosis
Lorcaserin	Lorcaserin can be taken with or without food.	5-HT2c receptor agonist	Pregnancy	Hypoglycemia, headache, back pain, cough, fatigue, dry mouth, constipation.	Serotonin Syndrome or NMS-like Reactions, Valvular Heart Disease, Cognitive Impairment, Psychiatric Disorders, Hypoglycemia, Heart Rate Decreases, Hematological Changes, Prolactin Elevation
Naltrexone SR / bupropion	Upwards titration over 4 weeks to maximum of two tablets twice daily	Combination opioid antagonist and aminoketone antidepressant	Seizure disorders, anorexia nervosa or bulimia, chronic opioid use Uncontrolled hypertension, MAOI use within 14 days, abrupt discontinuation of alcohol or seizure medications	Difficulty sleeping, anxiety, nervousness, abdominal pain/ cramps, nausea and/or vomiting, low energy, joint and muscle pain, and headache	Vulnerability To Opioid Overdose, Patients Receiving Opioid Analgesics(Mental status changes), Hepatotoxicity, Depression And Suicidality,

Liraglutide	Start with 0.6 mg subcutaneously once daily for 7 days; titrate upwards weekly to 1.2 mg, 2.4 mg, and then maximum dosage of 3.0 mg once Daily. Liraglutide should be discontinued, however, if a patient cannot tolerate the 3 mg dose, as efficacy has not been established at lower doses (0.6, 1.2, 1.8, and 2.4 mg)	GLP1 receptor agonist	Family or personal history of medullary thyroid cancer or multiple endocrine neoplasia type 2 (MEN2) syndrome	The most common adverse reactions leading todiscontinuation were nausea (2.9% versus 0.2% for Liraglutide and placebo, respectively), vomiting (1.7% versus less than 0.1%), and diarrhea (1.4% versus 0%).	Risk of Thyroid C-Cell Tumors, Acute Pancreatitis, Acute Gallbladder Disease, Risk for Hypoglycemia with Concomitant Use of Anti-Diabetic Therapy, Heart Rate Increase, Renal Impairment, Hypersensitivity Reactions, Suicidal Behavior and Ideation.

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