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Current status of weight loss medications and therapeutic interventions: A Pharmacologist's approach

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Abstract

Obesity threatens the overall well-being of patients and is a major public health concern. It is basically a consequence of excess adipose tissue getting accumulated in the adipocytes (fat cells). The number of adipocytes is usually constant in an individual but when such individual become obese, the content of each cell multiplies and can increase in size up to100 times. The Body Mass Index, i.e. BMI, calculated as weight (kg) divided by height (m^2), is a continuous, although imperfect, measure of body fatness and can be readily and reliably quantified in clinical settings. The BMI correlates with total body fat (TBF) as well, which is estimated using Dual Energy X-ray Absorptiometry (DEXA) scanning in overweight and obese individuals. The BMI exceeds 30 kg/m^2 at any age group in case of obesity. Anti-obesity medications or weight loss drugs are the pharmacological agents which reduce and/or control body weight. These drugs alter one or the other fundamental processes (appetite, metabolism, absorption of calories etc.) of the human weight control mechanisms. Orlistat was the only anti-obesity medications approved by the FDA for long term use. It reduces intestinal fat absorption by inhibiting pancreatic lipase. Rimonabant, a second drug, works via a specific blockade of the endocannabinoid system. But due to safety concerns, it never got USFDA-approval. Sibutramine which acts in the brain to inhibit deactivation of the neurotransmitters, thereby decreasing appetite was also withdrawn from the US and Canadian markets in October 2010 due to cardiovascular risks. Finally in last 13 years, in June'2012, US regulators approved the first drug called **lorcaserin** to treat obesity. Lorcaserin was approved for obese adults who have high blood pressure, high cholesterol or type 2 diabetes, and is to be used in combination with a low-calorie diet and exercise. Also recently in July'2012, USFDA has approved extended-release **phentermine plus topiramate** (marketed as Qsymia) in the form of an add-on therapy along with low-calorie diet and exercise for the long term management of overweight and/or obese adults. There are so many other medications (will be discussed for their present status on the conference podium), all of which are proposed to have anti-obesity effects but because of potential side effects, it is recommended that they should only be prescribed for obesity where it is hoped that the benefits of the treatment outweigh its risks. Another strategy to prevent obesity explored in the dietary industry are many kinds of **fat substitutes.** Because an uncontrolled diet and a lack of exercise (the most common causes of obesity) there are some fairly simple treatments for obesity. To incorporate more natural foods into the diet, to drink more water, to cut-out junk food and to get into the habit of exercising several times every week, we can drastically lower our weight and decrease the chances of becoming obese. If there are some disease like hypothyroidism, specific medications are needed that can help regulate the thyroid gland and improve the rate of metabolism. Lastly I would say that find out the causes of obesity and then go for the treatment and prevention. However the main treatment modalities for overweight and obese individuals remain dieting and physical exercise and not the intake of medicines.

Biography

Kiran V. Barar is Senior Professor & Head at the Department of Pharmacology, S.P.Medical College (SPMC), Bikaner, Rajasthan, India, also serving as Honorary Professor at "Albert Schiwtzer International University" (ASIU), Geneva, Switzerland since the year 2000. Dr.Kiran is Coordinator, Medical-Education-Unit (MEU), Convener, Anti-Ragging Committee (ARC) and Chairperson, Working-Women-Harassment-Cell at SPMC. She is MCI-Inspector/Assessor for MD (Pharmacology), Inspector for Pharmacy-Colleges through RUHS-Jaipur and Member in various Councils/Committees/Board viz. Institutional Research Board (IRB), Standing Disciplinary Committee (SDC), Hospital Acquired Infection Control Committee, Academic-Council and Scrutiny-Committee for Inspected Colleges for Affiliation to RUHS. Dr.Kiran is also Secretary, Pharmacovigilance-Committee (PVC), Chairperson, Prescription-Audit for Generic Medicine (PAGM) and Member in Drugs and Therapeutics Committee (DTC) of SPMC. She has Published '61' papers and has been an Editor, Reviewer and Writer/Columnist. Dr.Kiran has been a Meritorious (Gold Medalist) throughout, Winner of various "Distinctions, Awards and Prizes" during her whole academic career and also has been Recipient of National Merit Scholarship for four years (1976-1980). Dr.Kiran is Life-Member in IPS, SOPI and KSPOR (ISPOR), has remained an Active Member in the New York Academy of Sciences (NYAS) in the yr.1999. She is presently a Full Individual Member in Organization for Women in Science for the Developing World (OWSDW/ previously TWOWS) and Member in DIA-India. Dr.Kiran has acted as Nodal Officer and Mo/Ic of "Telemedicine-Centre for CME" at JLNMC-Ajmer. She has served as Resource-Person/Moderator in various teaching programs/CME/group-discussions and also Deliberated "Lead-Lectures "in subjects like Neurodegenerative/Alzheimer'sDisease(s), Biopharmaceuticals / Biosimilars, Toxicogenomics/Proteomics, Fast food-Toxicology, Antiretroviral Therapy (ART), Antiretroviral-Adherence, Role of Cinnamon in AIDS, Leprosy, Medical-Education, Telemedicine, Pharmacoeconomics/Health-Economics, Prescription-Auditing, Drug-Utilization-Studies (DUS), Pharmacovigilance/ARV-Vigilance, Dosing in Renal / Hepatic Impairment(s), Drug-Resistance, Drug-Abuse, Drug-Regulatory Affairs etc.