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Physical activity in elderly obese women with type 2 diabetes

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Abstract

Diabetes is a global health problem with significant human, social, and economic impacts. It has been estimated that 380 million individuals would be affected with diabetes worldwide by the year 2025. In the United States alone, there are 23.6 million adults 20 years or older with diabetes, and approximately 90% of them have type 2 diabetes mellitus (T2DM). People with diabetes are at increased risk of peripheral heart disease, congestive heart failure, coronary artery disease and myocardial infarction as well as a five-fold increase in sudden death, the Framingham heart study revealed. The increasing prevalence of T2DM is directly related to an increasing rise in the prevalence of physical inactivity and obesity. In a meta- analysis of 14 studies, exercise resulted in a clinically significant reduction in post intervention HbA1c in type 2 diabetic patients. A substantial proportion of patients with type 2 diabetes do not engage in the recommended level of physical activity. In fact, data shows that only 23% of older adults with type 2 diabetes reported 60 min of weekly physical activity. This is particularly a concern in elderly obese women in whom the range of physical activity is further restricted by their physical fitness coupled with high insulin resistance caused by their obesity. Data suggests that a mild increase in physical activity in this population would significantly decrease the morbidity caused by micro and macro vascular complications of diabetes. So in order to tackle the growing problem of diabetes in this population, a multifactorial approach has to be undertaken by the clinicians. Before implementing any pattern of physical activity or an exercise program, patients must be subjected to a detailed medical evaluation with appropriate diagnostic studies. Subjects should be carefully screened for the presence of macro and micro vascular complications that may be worsened by the exercise program. The next step should be prescribing them an exercise regimen, which would suit the patient based on their physical fitness. They should be strongly encouraged to lose weight. A major Government study, the Diabetes Prevention Program (DPP), shows that modest weight loss of 5 to 7 percent could delay and possibly prevent type 2 diabetes. Elderly obese women also have an increased prevalence of osteoporosis and vitamin D deficiency. Evidence shows that that vitamin D deficiency is detrimental to beta cell function, and leads to glucose intolerance in animal models and humans. In Nurses Health Study – a large prospective, observational cohort, women with the highest calcium and vitamin D intake (> 1200 mg and > 800 IU daily, respectively) had a 33% lower risk of incident type 2 diabetes mellitus than women with the lowest calcium and vitamin D intake (< 600 mg and < 400 IU daily, respectively). A recent study by Enju Liu et al showed that higher vitamin D status was inversely associated with fasting markers of insulin resistance. Therefore all diabetic women in the elderly age group should be worked up for vitamin D deficiency and supplemented if deficient, which could improve insulin sensitivity and in turn help them attain better glycemic control. After the implementation of the exercise regimen patient should be constantly monitored and motivated during each follow up visit. They should be asked to document their daily physical activity and the same should be reviewed during the follow-ups. If possible, these patients can be assigned in to groups, which would increase their compliance. Increased physical activity also stimulates lipolytic activity, promotes the use of FFA as an energy source and thus helps in weight loss in this age group. A lot of these obese women with diabetes have co-existing hypertension. Increasing the level of physical work reduces heart rate, improves the sensitivity of aortic baroreceptors, peripheral vasodilation and decrease activity of sympathetic nervous system and renin-angiotensin system, which contributes to a more efficient regulation of blood pressure. Physical activity also improves quality of life in these patients. In addition to increasing the level of physical activity, appropriate medical and nutrition therapy also plays a key role in attaining good glycemic control and promoting weight loss in elderly obese women. In summary a simple physical activity regimen tailored to the patients with motivational interviewing and counseling could cause a significant improvement in glycemic control, physical fitness and quality of life in elderly obese women with uncontrolled type 2 diabetes.

Biography

Amarabalan Rajendran has completed his MBBS at the age of 22 years from Sri Ramachandra University, Chennai India. After that he worked as a House officer in the Department of Endocrinology Diabetes and Metabolism, Sri Ramachandra Medical Centre. He has about nine International publications in peer reviewed Journals. He is currently in the United States for his Graduate medical education application and he is aspired in Pursuing Internal Medicine residency in the United States.