In the last few months, there have been a number of new clinical practice guidelines on nutrition in diabetic patients by the American Association of Clinical Endocrinologists in conjunction with the Obesity Society. The Obesity Society, American Heart Association, and American College of Cardiology have released new clinical practice guidelines for management of patients with obesity. The prevalence of diabetes all over the world is increasing along with the prevalence of obesity. There are currently approximately 30 million Americans and up to 350 million patients worldwide with diabetes mellitus (DM). We have more than 30 different medications in 11 classes of drugs to manage Type I and Type II DM. There were only a few drugs available when I was in medical school in the 1970’s, and all medical text books emphasized diet and exercise as first line treatment for Type II DM patients. I believe diet and exercise should still be emphasized as the first line of diabetic treatment, and as patients transition from healthy diet and exercise to the addition of medications in order to optimize glycemic control, nutrition and exercise should continue to be an essential component of the treatment plan. New ADA guidelines recommend for the first time that patients with diabetes should limit or avoid super sweetened beverages from any caloric sweetener including high fructose corn syrup and sucrose. The carbohydrates in diabetic patients’ diets should come from vegetables, whole grains, fruits, legumes, and dairy products. A recent multi-center trial in Spain by J. Salas-Salvadó et al confirmed that a Mediterranean diet supplemented with extra virgin olive oil decreased 40% relative reduction in diabetes risk compared with the control group [1]. The subjects in this study had a median 4.1 years of follow up.

I would like to mention a patient, a 42 years old male of Asian origin whom I saw in a diabetic clinic about 9 months ago. The patient had presented to an internal medicine clinic 1 month before he was seen by me, with 2 months history of pain on penile erection and inability to retract foreskin of penis. He was diagnosed with balanitis and phimosis, treated with doxycycline orally and triple antibiotic cream topically. After that, the patient was referred to the urology clinic where glucose was detected in his urine and his HbA1c came back as 12.9%. Urine was negative for bacterial infection, gonococcus, and chlamydia. Urine cx was positive for Candida albicans. The patient had migrated to the USA only 4 months before and had started drinking a large quantity of Coke and other sugary beverages of up to 2 liters/day. He also had stopped exercising. For 2 months before presenting at the medical clinic, he had symptoms of increased thirst and nocturia. Three weeks before presentation, he travelled to England and continued to consume large amounts of sugary beverages and ate large quantities of cake (his uncle owned a cake shop). The patient had no family history of DM, and he is a non-smoker and does not consume any alcohol. His height was 180 cm, and he weighed 78.7 kg with a BMI of 23.7.

When we discussed the need for insulin treatment at the initial visit because of high fasting glucose levels of 250-300 and HbA1c of > 12%, the patient showed his reluctance but agreed to make drastic changes in lifestyle. He completely stopped consuming sugary drinks and began 20 minutes walking and 20 minutes bicycling daily. He also started taking metformin500 mg twice daily along with glimepiride 2 mg daily orally. He was given treatment for urinary candidiasis. He was encouraged to increase his exercise level. Exercise helps to burn calories and brings down blood glucose levels immediately. In the long run, it helps reduce insulin resistance seen in most type II DM patients who are obese. Diet and exercise also lead to weight loss which has shown to reduce blood pressure and cholesterol levels, thus reducing cardiovascular risks in Type II DM patients. Within one month, the patient lost 8 pounds, and his blood glucose was between 90-110 before breakfast, lunch, and dinner.
The patient was very motivated. He would take capillary glucose before and after exercise. He even learned that walking at a slow pace on a treadmill was not enough, so he would walk faster to decrease post exercise glucose by 60-70 mg/dl as compared to pre-exercise levels. Four and a half months after his first visit, his HbA1c was 6.9%, and he was taking metformin 500 mg once daily with glimepiride 2 mg daily. His fasting glucose was in the 100-110 range and post exercise capillary blood glucoses in the 90’s. When seen seven and a half months after his initial visit, he had stopped all oral medications but continued his diet and exercise. His HbA1c at this visit had gone up to 7.5%. The patient was convinced to start back on metformin, which he takes only 500 mg daily now.

Diet and exercise should also be promoted in patients with pre-diabetes, which is defined now as fasting blood glucose levels between 101 – 125 mg/dL or HbA1c levels between 5.7% - 6.4%. These patients are equally at increased risk of cardiovascular complications, as are diabetic patients. There are approximately 45 million Americans with pre-diabetes who may progress to diabetes if not detected and treated early. The U.S Diabetes Prevention Program and Finnish Diabetes Intervention Study [2,3] have clearly shown that progression from pre-diabetes to diabetes can be halted in 58% of patients with diet and life style modifications and 31% by metformin alone.

When I precept resident clinics at my institution, I see a lot of hesitation on the part of residents to treat pre-diabetes. Many times they want to wait 3-6 months to repeat HbA1c in a patient whose current HbA1c is 6.4%. They prefer to treat the patient once HbA1c is 6.5% or more. This clearly should not be acceptable any more. As per recent data, there are 33% of Americans above the age of 18 years who are obese. The stress on diet and exercise will hopefully help reduce the prevalence of obesity as well.

References

*Corresponding Author: Dr. Jaspal S Gujral, 1120 15th Street, Suite HB 2010, Augusta, GA 30912 USA, Telephone: 706-721-4078, Fax: 706-721-0504, Email: jgujral@gru.edu.

Received Date: March 19, 2014, Accepted Date: May 5, 2014, Published Date: May 13, 2014.

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