Effect of Eating Frequency on Diabetes: A Case Report from Latur City, India

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ABSTRACT

Introduction: India has the unfortunate privilege of being the “diabetes capital” of the world. The prevalence rates have been estimated to be 12% in urban areas and 4% in rural areas. More concerning is the fact that diabetes prevalence over the past four decades has increased fourfold. Diabetes is a lifestyle disease and there have been many trials to study effect of exercise and diet management to prevent diabetes. Once a person is labeled as diabetic, then drugs become the mainstay of management. Reducing eating frequency reduces fasting insulin level, which is a proxy for knowing about insulin resistance and impending diabetes. This case report presents the effect of twice-a-day eating frequency on diabetes status.

Materials and methods: A male patient, 45 years old, professor by profession, was diagnosed to have diabetes with glycated hemoglobin (HbA1C) of 10.1, average blood glucose of 243 mg% and fasting and postmeal blood sugars of 213.51 and 283.65 mg% respectively. He was advised to eat only twice in a day and was monitored for fasting and postmeal blood sugars, HbA1C, fasting insulin, weight, and waist circumference.

Results: From January 1, 2017 to August 16, 2017 his HbA1C came down to 5.3. His weight reduced from 86.5 to 72.2 kg, a reduction of 14.3 kg! His waist circumference reduced by 6.5 inches (from 42 to 35.5 inches)!

Conclusion: Eating twice a day caused reversal of diabetes status in a period of 7.5 months. There were favorable changes on HbA1C, fasting insulin, fasting and postmeal blood sugars, weight, and waist circumference. Reducing eating frequency seems to be a very effective way to reverse diabetes status.

Keywords: Case report, Eating frequency, Reversal of diabetes.

INTRODUCTION

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. India has the unfortunate privilege of being the “diabetes capital” of the world. The prevalence rates have been estimated to be 12% in urban areas and 4% in rural areas. More concerning is the fact that diabetes prevalence over the past four decades has increased fourfold. Hyperinsulinemia is responsible for problems like obesity, hyperlipidemia, hypertension, and insulin resistance. Insulin secretion in the body is of two types. There is a baseline secretion of 18 to 32 units per day. The other type is insulin secreted due to every episode of eating. If eating frequency is reduced to only twice in a day, the insulin secretion will be less. Hence, the person will get the benefits of lowered level of insulin that facilitates use of fats for energy purpose. It will also reduce the fasting insulin levels that are a proxy for insulin resistance and diabetes status. Effect of reduced eating frequency on fasting insulin level was published as a case report by the author. With the encouraging results obtained on people with prediabetes, the author had tried to see effect of twice-a-day eating frequency on diabetes status of a patient in this case report. The objective is to study the effect of eating frequency on diabetes status.

MATERIALS AND METHODS

A male professor, of age 45 years, from an Arts College was diagnosed to have diabetes on January 1, 2017. On January 1, 2017, his HbA1C was 10.1 and average blood glucose was 243 mg%. His weight was 86.5 kg and height was 170 cm. His waist circumference was 42 inches and fasting insulin was 11.22. His fasting and postmeal blood sugars were 213.51 and 283.65 mg% respectively. The diabetologist advised him to start with medicines. The patient knew about the campaign “Obesity and diabetes free India” initiated by the author. He volunteered to try the twice-a-day eating diet plan and walking 4.5 km in 45 minutes every day rather than go for medicines. The campaign is based on the principle of “carbohydrate-insulin connection theory.” By reducing eating frequency, there is a decrease in fasting insulin levels, which means that the person will become sensitive to insulin. Consequently, their diabetes will get delayed or prevented. There will be beneficial effect on diabetes status.

The patient was given the following advice:

- Identify the time of the day when he was really hungry and have meals at those two times.
• Eat whatever he was eating before starting the diet plan but just divide the quantity into two.
• More quantity (say 60–70%) should be at the time of lunch and remaining at dinner.
• He can eat any food item except sweets.
• He should finish the meal in maximum period of 55 minutes.
• He should not take tea/coffee with sugar, fruits, dry fruits, or any other eatables in between the two meals.
• He should also not use sugar substitutes as the sweet taste stimulates the secretion of insulin.
• If he feels hungry in between two meals, he can take water, green tea/black tea/tea with 25% milk and 75% water (all without sugar/sugar-free), thin buttermilk.
• Check his weight, waist circumference, HbA1C, fasting insulin, fasting and postmeal blood sugars every month.
• Walk 4.5 km in 45 minutes every day at least 5 days in a week.

RESULTS

The patient sincerely followed the diet plan and the exercise regime from day 1 till his last report.

Table 1 shows the changes that occurred over time on various parameters related to diabetes status.

It can be seen that the patient lost 14.3 kg weight in 7.5 months! His waist circumference decreased from 42 to 35.5 inches, which means he lost fats from his belly. A consistent decrease in HbA1C was observed and he became nondiabetic.

DISCUSSION

Diabetes mellitus is a lifestyle disease. The prevalence of diabetes in India and the world is on the rise in the last few decades. The same is true for obesity. There have been attempts to find out ways by which the possibility of diabetes mellitus can be delayed or prevented by lifestyle modifications or by medicines. The role of diet is discussed a lot. If we look at the traditional dietary composition of different tribes in the world, it reveals that people have adapted to different extremes of diets under different ecological settings. There are examples of tribes taking over 85% carbohydrates, 70% animal fats, or almost 100% dependence on meat and fish with practically no carbohydrate intake. Today, the macro-nutrient composition of the diets in America, where the prevalence of obesity is the highest, or India that has highest number of diabetics, is much more “balanced” than these extreme diet communities. But interestingly, the extreme diet communities traditionally had negligibly small prevalence of diabetes, hypertension, or high cholesterol.6 This view reduces the importance given to dietary modifications suggested as a means to prevent diabetes. In our intervention, the diet plan advised had no restriction on any food item except for sweets. Patient was allowed to eat all food items in quantity and variety that he used to eat before starting this diet plan. And it has shown good improvement as regards HbA1C and fasting insulin levels. He has now converted to nondiabetic status within 7.5 months.

The Diabetes Prevention Program (DPP) was a major multicenter clinical research study aimed at discovering whether modest weight loss through dietary changes and increased physical activity or treatment with the oral diabetes drug metformin (Glucophage) could prevent or delay the onset of type 2 diabetes in the study participants. The DPP found that participants who lost a modest amount of weight through dietary changes and increased physical activity sharply reduced their chances of developing diabetes. Taking metformin also reduced risk, although less dramatically.6 The diet plan with twice-a-day eating frequency and simple exercise of walking 4.5 km in 45 minutes every day, at least 5 days in a week, has caused reversal of diabetes in the patient. This highlights the role of lifestyle modification over antidiabetes medicines even in a frank case of diabetes.

It is clear that a lifestyle disease should have a solution in lifestyle modification! The results of this case report are quite promising in this context. In a resource-poor country like India, it is almost impossible to treat millions
of diabetics and the complications of diabetes. The simple lifestyle modification suggested in this study can prove appropriate for our country. Larger studies are needed to gather more evidence in this regard.

**CONCLUSION**

Eating twice a day with walking 4.5 km in 45 minutes every day caused reversal of diabetes in the patient. All of the objective parameters such as weight, waist circumference, HbA1C, fasting insulin, fasting and postmeal blood sugars showed consistent improvement over a period of 7.5 months.

**LIMITATIONS**

The study has all limitations of a case report. Further studies are required to test this hypothesis in order to critically evaluate this simple and cheap method of reversing diabetes.

**REFERENCES**