Research Paper Physical Education

Impact of religious practice (Ramadan) on fasting and post - prandial glucose of type 2 diabetic patients

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ABSTRACT

Every year Muslims have to fast for one month called Ramadan. In this study, we investigated the effects of that month (Ramadan) on fasting and post prandial glucose levels of type 2 diabetic patients. Forty type 2 diabetic patients who had planned not to fast during Ramadan were included in the study. Fasting and post prandial glucose was measured before and after the month of Ramadan. We found that there was a significant alteration in the fasting and post prandial glucose levels in these patients. Hence our results suggest that the month of Ramadan is beneficial in controlling the glucose levels of type 2 diabetic patients. Ramadan fasting can cause significant reductions in fasting and post prandial glucose levels of type 2 diabetic patients.

KEYWORDS Ramadan, type 2 diabetes, fasting glucose, post prandial glucose.

INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia due to absolute or relative deficiency of insulin. It has been a threat to developing as well as developed countries. According to World Health Organization, the diabetic population of the world is likely to increase to 300 million or more by the year of 2025[1]. India has the largest population of people with diabetes mellitus approximately 50 million and this has further set to rise to 70 million by the year 2025 [2]. Supra physiological glucose concentration brings pathological disturbances and complications in pancreas, eyes, liver, muscle, adipose tissue, nerves and kidney [3]. Based on epidemiological studies, among the two major types of diabetes (type1 and type 2), type 2 diabetes is the most common form of diabetes, constituting 90 to 95 percent of the overall diabetic population [4]

Islam is one of the major religions of the world, there are 1.1 to 1.5 billion Muslims approximately worldwide, and that is 18 to 25 percent of world population [5, 6]. Indian is secular country and Muslims constitute 14.6% of its secular nature [7]. Jammu and Kashmir is one of the Muslim majority states and the Kashmir valley consists of 97% of Muslims.

All adult Muslims are obliged to fast during the month of Ramadan; however children, elderly people, trawlers, pregnant, nursing women and unhealthy individuals are exempted from fasting [8].The holy Quran has explained the need and importance of fasting in its various chapters and the particular verses in this context are verse no. 183 to 185 in chapter 2 [9].

The Islamic calendar year is lunar, Ramadan is the 9th month and it starts approximately 10 days earlier every passing year, with duration varying between 29 and 30 days, and timings changing with respect to geographical location and seasons, daily fast duration ranges from a few to 20 hours. Muslims who fast in the month of Ramadan may abstain from eating, drinking, smoking and use of oral medications from predawn to after sun set; however there are no restrictions on fluid or food intake between sun set and dawn. During the month of Ramadan, there are two main meals namely the "Iftar" (i.e. breakfast immediately after sunset) and "Sohur" (i.e. pre-dawn meal) [10].

METHODOLOGY

The study was conducted at Department of Endocrinology, Sher-i-Kashmir Institute of Medical Sciences, Soura, Srinagar, Jammu and Kashmir, India, during the month of Ramadan (July 10th to August 8th) 2013. Patents were selected one month prior to start of Ramadan and were informed about the study. Forty type 2 diabetic non fasting volunteers were selected as subjects for this study. The subjects were advised to take their medicine regularly as per routine. Patients who were insulin dependent were told to take their insulin doses as advised by the doctor. Fasting and post prandial glucose was measured one day prior to and after Ramadan. The experiments were replicated three times and the mean and standard deviation ($\bar{X}$ ±SD) of the data were calculated statistically. The collected data was also analyzed by using correlated "t" test. The confidence level to test the significance was fixed at 0.05.

RESULTS

The average fasting period during Ramadan 2013 in Kashmir valley was 16 hours (4.00 am to 7.45 pm). Forty patients were selected for the study and all of them were non-fasting. At the start of Ramadan the blood glucose levels were higher and these significantly declined towards normalcy.

The average fasting blood glucose was 147.2 before Ramadan and after Ramadan it was 125.6, average postprandial glucose was 184.25 before Ramadan and after Ramadan it was 162.41 (Table-1). The't' value shows significant reductions in fasting blood glucose. However in post prandial glucose the reduction observed was not significant. Hence it was concluded from the results that positive reduction was noticed in the fasting and post prandial blood glucose levels of type 2 diabetic patients during the month of Ramadan.

Table-1. Changes in fasting and post prandial glucose levels before and after the Month of Ramadan.

Variable		$\bar{X}$	Σ	SE	R	T
FG	Pre	147.27	47.99	7.58	0.320	2.565*
	Post	126.65	35.19	5.63		
PPG	Pre	184.72	9.35	9.35	0.547	1.897
	Post	162.41	7.13	7.13		

Note: P = 2.03

DISCUSSION

Type 2 diabetes mellitus is increasing worldwide [11]. The over production and decreased utilization of glucose by the tissues are fundamental basis of hyperglycemia in diabetes mellitus [12]. With the verification provided by the current study, it was proved that the month of Ramadan has a beneficial effect on almost all the diabetic patients whether they fast or not.

Efficiency of medical nutrition therapy (MNT) in the management of diabetes has been well established [13].Previous reviews have provided comprehensive recommendations for MNT in the management of diabetes [14,15]. The goals of MNT are to attain and maintain optimal blood glucose levels, a lipid and lipoprotein profile that reduces the risk of macro vascular disease, and blood pressure levels that reduce the risk for vascular disease, to prevent and treat the chronic complications of diabetes by modifying nutrient intake and lifestyle, address individual nutrition needs, taking into account personal and cultural preferences and willingness to change; and maintain the pleasure of eating by only limiting food choices when indicated by scientific evidence [16]

Medical nutrition therapy is integral to diabetes management [17]. However, some researchers and clinicians have raised concerns about affected individuals' ability to understand and adhere to prescribed diets [18,19].But in the holy month of Ramadan they don't need any ones advice to eat this way or that way. They make their diet plans so that they show full respect to this holy month. Hence the holy month of Ramadan does what doctors, dieticians, family members, friends and others fail to do. More over in this holy month every Muslim family irrespective of socio economic status takes a balanced diet. This also proves beneficial as a recent randomized, controlled trial in individuals with type 2 diabetes tested a diet regimen relying on qualitative, rather than quantitative changes [20]. Based on prior studies suggesting that low-fat, plant-based diets reduce the risk of diabetes and may facilitate its management [21]. The study design used a low-fat vegan diet and did not require carbohydrate counting, exchange lists, or portion limits [20].

CONCLUSION

From the present observations it can be concluded that Islamic religious practice (Ramadan) may reduce fasting blood glucose level of type 2 diabetic patients. Food intake at regular intervals with regular salah (prayer) may reduce post prandial glucose level of type 2 diabetic patients. Therefore Type 2 diabetic patients are recommended to follow religious activity (Ramadan) by offering salah regularly with changing life styles (food intake).

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