P-1137 Effect of Fasting Ramadan on Different laboratory parameters in Egyptian patients with type 2 Diabetes Mellitus

Maram M.Aboromia¹, Hanan M.Amer¹, Yara M.Eid¹, Yomna kabany²

¹Ain-Shams University Hospitals – Internal Medicine department, Cairo –Egypt

²National Diabetes Institute, Cairo-Egypt.

Background

Most of the diabetic Muslims have strong desire to fast during the month of Ramadan. But some of them cannot perform it as there is a risk of an assortment of complications like hypoglycemia or hyperglycemia. During Ramadan, the meal pattern and fluid intake is markedly altered and there are delayed and shortened periods of sleep. It would be possible that these changes in meal and sleeping rhythm could lead to an undesirable change in metabolism and increase risk of complications like hypoglycemia, hyperglycemia, diabetic ketoacidosis, dehydration and thrombosis

Aim

To Study the effect of Ramadan Fasting on metabolic parameters and cardiovascular disease risk in patients with type 2 diabetes mellitus

Methods

This study was conducted on total of 80 patients with type 2 diabetes mellitus who were intending to fast Ramadan in (2014) the average fasting hours were 15 h. They were subjected to clinical, anthropometric and laboratory evaluation before Ramadan and after Ramadan

Results

There was a significant increase between pre and after Ramadan values as regards serum cholesterol, mean difference (56.62md/dl) triglyceride(46.61mg/dl), LDL cholesterol (38.36mg/dl) Fasting insulin(6.53mu/l), HOMA IR (4.56 IU) , serum Creatinine (0.12mg/dl) , Systolic blood pressure(SBP) (6.28 mmHg), Diastolic blood pressure(DBP) (7.13 mmHg), and the 10 years cardiovascular disease(CVD) risk was increased by (2.38). There was no significant difference as regard Body mass index. There was a significant positive correlation between 10 years CVD risk and Fasting insulin (r = 0.24), SBP (r = 0.62), DBP (r = 0.60).The most important predictors of CVD were smoking (P= 0.000) followed by cholesterol and triglyceride with values of (P=0.248) and P=0.067), respectively.

Conclusion

Ramadan fasting appears to have significant effect on lipid profiles and insulin resistance that could adversely impact cardiovascular outcome, these effects may be attributed to the quality & quantity of food intake and the negative impact of sedentary life style, we recommend that Pre-Ramadan counselling , education , lifestyle modification and moderate physical activity would improve the benefits of fasting on health outcome

Introduction

Diabetes burden is expected to continuously rise in MENA region and other areas in the globe (1), yet the burden of this predominantly Muslim populated areas has a special particularity in Ramadan fasting. While exempted from fasting many Muslim patients choose to fast (2). The existing literature on the effects of Ramadan fasting on cardiovascular outcomes and related factors are controversial (2), in addition studies addressing this point in diabetic populations are rather few.

Aim of the study : To study the impact of Ramadan fasting on metabolic parameters, cardiovascular risk and anthropometry in Egypt

Study Design:

A cohort study that was conducted upon 80 people with type 2 diabetes who were intending to fast Ramadan (2014) with an average of 15 hours of fasting , the study was approved by the local faculty ethical committee. Patients were invited for full clinical and anthropometric examination and laboratory evaluation one day prior to Ramadan and after Feast by one day.

Laboratory evaluation included Fasting blood sugar , 2hr Post Prandial blood sugar , HbA1c%,Fasting serum lipid profile (total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides),Creatinine, albumin/ Creatinine ratio, Highly sensitive c reactive protein (**HSCRP**) and fasting insulin for calculation of HOMA-IR .Also Framingham risk Score was applied to detect cardiovascular risk score pre Ramadan and after Ramadan.

Patients with type 1 diabetes , chronic kidney disease > stage 3 , hepatic disease CHILd B and C classification and pregnant patients were excluded from the study and provided with appropriate medical advice .

Results

The mean age of the study population was 49.91±10 with a gender distribution of 19 (23,75%) males and 61 (76.25%) females.

Smokers constituted 22.5% of the study population while 67.5% of the patients were hypertensive.

1. “IDF Diabetes Atlas - 7th Edition.” *IDF Diabetes Atlas - Home*, IDF, 2015, www.diabetesatlas.org/.
2. Mazidi M, Rezaie P, Chaudhri O, et al. The effect of Ramadan fasting on cardiometabolic risk factors and anthropometrics parameters: A systematic review. *Pakistan Journal of Medical Sciences*. 2015;31(5):1250-1255. doi:10.12669/pjms.315.7649.

HsCRP qualitative before Ramadan

HsCRP qualitative after Ramadan

Table 1 showing Comparison of the study variables (paired t-test)

Variable	Before Ramadan mean ±SD	After Ramadan mean± SD	MD	t	P value
FBS mg/dl	164.2 ± 43.1	212.5±190.5	0.787-	-0.23	0.8
PPBS mg/dl	281.4 ± 83.9	287.3± 85.7	-5.9	-0.88	0.38
HbA1c%	8.1±2.02	8±2.13	0.06	0.554	0.6
TC mg/dl	145.5±46	202.13±39.9	-56.62	-10.7	<0.001
TG mg/dl	150.03±84.2	196.6±133.2	-46.6	-2.92	0.004
HDL-c mg/dl	42±15	46±6.9	-3.9	-2.5	0.014
LDL-c mg/dl	78.5±42.1	117.6±46.07	-39.03	-7.17	<0.001
Fasting insulin U/L	6.1 ± 3.7	12.6 ± 8.2	-6.537	2.3	<0.001
HOMA-IR	2.42±1.6	7.02±8.9	-4.56	-4.5	<0.001
BMI kg/m²	36.1±5.9	36±5.6	0.08	0.5	0.62
Waist hip ratio	0.906±0.11	0.907±0.11	-0.0005	-0.45	0.65
Serum creatinine mg/dl	0.81±0.2	0.94±0.3	-0.12	-5.1	<0.001
Albumin/creatinine ratio	21.2 ± 6.5	21.4 ± 6.2	-0.04	-1.84	0.07
SBP mmHg	134.9 ± 10.8	141.2 ± 11.9	-6.28	-14.32	<0.001
DBP mmHg	94.7 ± 10.7	101.8 ± 11.3	-7.13	-9.97	<0.001
10 years CVD risk	5.18± 7.8	7.6±9.9	-2.38	-4.09	<0.001

Correlation of 10 year CVD risk score and studied variables showed a significant positive correlation with systolic blood pressure , diastolic blood pressure and fasting insulin (r=0.62 ;0.6 and 0.24 respectively).Also binary logistic regression analysis for predictors of 10 years CVD score after Ramadan fasting showed that the most important predictors of CVD were Smoking followed by Cholesterol and Triglyceride.

Lipid profile , Fasting insulin , HOMA-IR , SBP, DBP, HsCRP and serum creatinine significantly increased after Ramadan fasting while glycemic parameters showed a non-significant rise (**Table 1**)

Conclusion

We concluded that Ramadan fasting in people with type 2 diabetes appears to have significant effect on lipid profiles and blood pressure that could adversely impact cardiovascular risk.

Current guidance is more focused on glycemic control and oral hypoglycemic agents and insulin dose adjustments. Nonetheless Cardiovascular disease risk assessment and guidance prior to Ramadan fasting should not be overlooked.