

Ramadan Fasting among older children and adolescents with Type 1 Diabetes:

A real world study from the UAE

Tawfik Muammar, Esphie Grace Fojas, Radwa Helal, Nader Lessan

Imperial College London Diabetes Centre (ICLDC), Abu Dhabi, UAE

Background

Ramadan fasting (RF) is a religious obligation for all healthy adult Muslims. The sick including patients with type 1 diabetes (T1D), and pre-pubertal children are exempt, but many choose to fast for cultural, social and personal reasons.

Objectives:

In this “real world” study, we have investigated glycaemic control (HbA1c, and continuous glucose monitoring-CGM, or flash glucose monitoring-FGM) in the context of RF practice in children and adolescents with T1D attending a Paediatric Endocrinology Clinic in the UAE. We have also compared relevant outcomes between multiple daily injections (MDI) or continuous subcutaneous insulin infusion (CSII) among the patients.

Methods:

Children and adolescents with T1D, and their families seen at ICLDC, who were insisting on fasting in the ensuing Ramadan were educated about diabetes management during fasting. Insulin dose was adjusted and remote medical support was made available as necessary. Relevant information including data on reported number of fasting days, hypoglycemia episodes, and diabetic ketoacidosis (DKA) were obtained through patient and family interviews. Information on weight, HbA1c, and blood glucose levels from CGM/FGM before (within one month prior), during, and after (within one month afterwards) Ramadan were retrieved retrospectively from the electronic database. Data are presented as mean $\pm$ SD.

Results:

47 patients, all with T1D (age 13.40 ± 2.42 years; diabetes duration 4.6 ± 3.1 years; 29 (61.7%) males (age 13.69 ± 2.54 years); 18 (38.3%) females (age 12.94 ± 2.21 years) were included in the study; 26 (55%) were on MDI and 21 (45%) were on CSII. 42 (89%) were able to fast for 22.3 ± 8.7 days during Ramadan.

Post-Ramadan mean HbA1c (8.7 ± 1.3 v 9.0 ± 1.7 %) and weight (54.9 ± 19.3 v 53.3 ± 18.0 kg) did not change significantly compared to pre-Ramadan values ($p=0.10$ and $p=0.60$, respectively). There was no statistically significant difference in CGM/FGM generated mean blood glucose level before, during, and after Ramadan as determined by one-way ANOVA ($F(2,80)=1.600$, $p=0.21$ -Table 1).

Between MDI and CSII, there was no significant difference in fasting days ($p=0.49$), frequency of hypoglycemia episodes ($p=0.98$), DKA frequency ($p=0.37$), HbA1c levels ($p=0.24$), and weight ($p=0.11$) after Ramadan.

Discussion:

Although Ramadan fasting for children and adolescents with T1D particularly those with poor glycaemic control involve high risks, patients do undertake RF due to religious or other reasons. Although our data show no significant deterioration in indicators of overall glycaemic control, they also emphasize the importance of an efficient system of patient and family support to help them through the RF. RF should be discouraged in children with T1D.

Mean blood glucose	mg/dL	p-Value (one way ANOVA)
Pre-Ramadan (n=32)	226.5 $\pm$ 54.6	0.21
During Ramadan (n=19)	251.6 $\pm$ 46.2	
Post-Ramadan (n=32)	225.7 $\pm$ 58.8	

Table 1. CGM/FGM calculated mean blood glucose levels before, during, and after Ramadan.