

Continuous glucose monitoring (CGM) study of patients with diabetes mellitus during Ramadan fasting: identifying patients at a higher risk

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Aims

Using CGM data to quantify risk of dysglycaemia by medication category in patients with diabetes during Ramadan fasting.

Methods

CGM was performed for at least three consecutive days on patients with diabetes mellitus during and outside Ramadan fasting days. Two single 24-hour mean glucose curves were constructed representing interstitial glucose profiles during these periods. Mean curves and data on individual patients were used to calculate high blood glucose index (HBGI) and time spent in hypoglycaemia. Patients were categorised into three different medication groups depend on whether medication included insulin or its secretagogues:

1. Insulin (n=14);
2. Insulin secretagogue (n=16);
3. Other (n=24).

Results

CGM data on 54 patients (38 male; 16 female) with diabetes (48 with type 2 and 6 with type 1, Hb A1c $7.26 \pm 1.34\%$) and seven healthy volunteers were analysed. Mean CGM curves in Ramadan showed a rapid rise in interstitial glucose at iftar (breaking of the fast) with the highest in group 1 followed by groups 2 and 3 (peaks 13.1, 11.4 and 9.8 mmol/l respectively). HBGI was higher during Ramadan and followed a similar stepwise trend (7.91 ± 1.17 in group 1, 4.03 ± 3.06 in group 2 and 1.59 ± 0.93 in group 3). There was no statistically significant difference in duration of time spent in hypoglycaemia before and during Ramadan fasting (2.46 % v 0.92 %-Wilcoxon signed ranks test).

Conclusions

Patients treated with insulin or insulin secretagogues have the highest risk of iftar time hyperglycaemia with Ramadan fasting. Hypoglycaemia was not a significant problem in the population studied.