



FRUCTOSAMINE LEVEL IN TYPE 1 DIABETES MELLITUS CHILDREN PERFORMING RAMADHAN FASTING



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Abstract:

Background: Ramadan fasting may influence metabolic control in Type 1 Diabetes Mellitus. Fructosamine is an accurate metabolic control in a short-term period. Comparison of fructosamine between intensive and conventional insulin regimen in T1DM children has not been widely studied.

Methods:

- Observational analytic study
- conducted in endocrine-OPC Dr. Soetomo hospital
- during Ramadan 2013 and 2015.
- Inclusion criterias: T1DM children performed Ramadan fasting before, and already diagnosed >6 months before the study.
- Exclusion criterias:
 - severe hypoglycemia < 3 months before the study,
 - recurrent hypoglycemia (blood glucose < 65 mg/dl)
 - hyperglycemia with DKA < 3 months before study conducted
 - hospitalized patients
 - History of kidney and liver disease and severe malnutrition.
- Fructosamine was evaluated 3 times (one week before, in the middle and at the end of Ramadan fasting).
- Daily blood glucose monitoring, DKA events, and hypoglycemia episodes were observed.
- Patients were divided into 2 groups: group 1 given intensive-treatment (Detemir, short-acting insulin) and group 2 conventional (intermediate, short-acting insulin).

Results:

Table 1. Demographics Data Children with T1DM

| Characteristics | Frequency n (%) | Mean | Range | SD |
|---|--------------------|-------|---------|-----|
| Gender | | | | |
| Male | 10 (41.7) | | | |
| Female | 14 (58.3) | | | |
| Age (year old) | | 14.92 | 9-19 | 2.6 |
| 5 – 9 years old | 1 (4.2) | | | |
| 10 – 14 years old | 8 (33.3) | | | |
| 15 – 19 years old | 15 (62.5) | | | |
| Weight (kg) | | | | |
| Before Ramadhan | | 45.3 | 27-63 | 9.5 |
| End of Ramadhan | | 44.6 | 26-63 | 9.4 |
| fasting | | | | |
| Length of Suffering From T1DM (year) | | 4.5 | 0.5 - 9 | 2.5 |
| History of DKA | | 2.13 | 1-3 | |
| 1 time | 3 (12.5) | | | |
| 2 times | 15 (62.5) | | | |
| 3 times | 6 (25) | | | |
| Insulin Regimens | | | | |
| Intensive | 9 (37.5) | | | |
| Conventional | 15 (62.5) | | | |

Objective:

To compare fructosamine level between intensive and conventional insulin regimens during Ramadan Fasting in T1DM.

Table 2. The Comparison of Fructosamine Levels Before, Middle, and at The End of Ramadhan Fasting

| Periode of Ramadhan Fasting | Mean of Fructosamine level (µmol/L) | | |
|-----------------------------|-------------------------------------|----------------|------|
| | Intensive | Conventional | p |
| Before | 497.1 (± 146.6) | 531,2(± 126.9) | 0.5* |
| Middle | 458.2 (± 104.8) | 529,6(± 118.6) | 0.1* |
| End | 467 (± 118) | 512(± 141.5) | 0.4* |

Comparison of Fructosamine level between groups before (497.1 vs. 531.2 µmol/L, P=0.5), middle (458.2 vs. 529.6 µmol/L, P=0.1) and at the end of Ramadan (467 vs. 512 µmol/L, P=0.4) were not significant (P>0.05). Most subjects (91.6%) had hyperglycemia without DKA with a mean of frequency 17.3 times. Neither symptomatic hypoglycemia nor DKA was found in this study.

Conclusion:

Fructosamine level during Ramadan fasting between intensive and conventional insulin regimens were similar. Type-1 DM fasting children did not experience symptomatic hypoglycemia or DKA.

Keywords:

fructosamine, metabolic control, T1DM, ramadan fasting, insulin, fructosamine, metabolic control, T1DM, ramadan fasting, insulin

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