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ABSTRACT BOOK

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able glucose data within a study phase. The MAGE, or mean change, is computed separately for changes in each direction for all identified events.

The results provided in the following table indicate that subjects had both lower peak to nadir and lower nadir to peak MAGE values in the unmasked phase than in the masked phase.

Prior analyses of glycemic variability have shown that the FreeStyle Navigator system does improve glycemic control. These MAGE findings appear to further confirm the impact of the FreeStyle Navigator system on glycemic variability.

Direction of qualifying glucose event

Nadir to peak events (N=8,056)			Peak to nadir events (N=7,876)		
Masked events- mean change (SD) in mg/dL	Unmasked events- mean change (SD) in mg/dL	Difference- mean (SD) in mg/dL, p-value	Masked events- mean change (SD) in mg/dL	Unmasked events- mean change (SD) in mg/dL	Difference- mean (SD) in mg/dL, p-value
132.5 (31.1)	126.1 (29.8)	6.4 (18.3) 0.0002	135.4 (32.8)	128.7 (31.3)	6.7 (22.7) 0.0017

420-P

Efficacy of Glycoalbumin to Monitor Rapidly Changing Blood Glucose

HIROYUKI TAMEMOTO, HIDEO TOYOSHIMA, TOMOYUKI SAITOH, MIHO YUZAWA, MIHO YUZAWA, SAN-E ISHIKAWA, MASANOBU KAWAKAMI, *Saitama, Japan*

Objective: Glycoalbumin (GA) changes more rapidly than HbA_{1c} and represents blood glucose of one to 2 weeks. We have analyzed the relationship of GA and 7-point daily blood glucose profile in patients hospitalized for control. We also analyzed the effect of proteinuria.

Methods: GA was measured by automated analyzer (JOEL Tokyo) using enzyme method (Lucica-GA-L, Asahi Kasei Tokyo). HbA_{1c} was measured by high-performance liquid chromatography method (Arkray Kyoto). Blood glucose, serum albumin and daily urinary protein excretion were measured by automated analyzer (JOEL Tokyo). Fifty one men and 47 women were analyzed. The average age was 59.8±12.7 (average ± SD) years, and average BMI was 25.2±4.7. The patients were served diet 25 kcal per his or her ideal body weight. Oral anti-diabetic drug (OAD) or insulin were adjusted according to the daily 4-point self blood glucose monitoring. Supervised exercise training was performed unless contraindicated. 7-point daily blood-glucose was measured before each meal, 2 hours after meal and at 22 o'clock on the 3rd and the 10th hospital day. HbA_{1c} was measured on the 2nd hospital day and GA was monitored on the 2nd and the 13th hospital day. The data were analyzed by univariate or multivariate regression analysis.

Results: Fasting blood glucose was lowered from 145.4±44.1mg/dl to 121.5±30.3mg/dl. Average value of 7-point daily blood glucose (ABG) was lowered from 182.9±55.9mg/dl to 154.5±36.2mg/dl in one week. GA was lowered from 25.5±7.1% to 22.5±5.9% in two weeks. Average HbA_{1c} on admission was 8.6±1.6%. Correlation coefficient between HbA_{1c} and ABG on the 3rd day was 0.399 (P<0.0001) while that between HbA_{1c} and ABG on the 10th day was 0.238 (p=0.019). Correlation coefficient between GA on the 2nd day and ABG on the 3rd day was 0.655 (p<0.0001) and that between GA on the 13th day and ABG on the 10th day was 0.536 (p<0.0001). When GA on the 2nd day and 7-point daily blood glucose on the 3rd day were analyzed by multiple regression analysis, blood glucose before lunch and before dinner were significantly correlated with GA (p<0.01 and p=0.029 respectively). When GA on the 2nd day, ABG on the 3rd day, serum albumin and daily urinary protein excretion were analyzed by multiple regression analysis, ABG was positively, serum albumin and urinary protein were negatively correlated with GA.

Conclusion: GA is a more useful method than HbA_{1c} to monitor rapidly changing blood glucose. GA is affected serum albumin turnover and urinary protein excretion.

421-P

Achieving Desirable Glycemic Targets without the risks of Hypoglycemia using a Teletitration Programme

JOTHYDEV KESAVADEV, SABEER A. RASHEED, DEEPA R. NAIR, *Trivandrum, Kerala, India*

Tight glycemic control is mostly unachievable in clinical practice due to fear of serious symptomatic hypoglycemia. UKPDS has shown that each 1% reduction in mean A1c was associated with 37% reduction in microvascular complications and 21% reduction in the risk of deaths related to diabetes, with the lowest risks associated with A1c value of below 6%. In our centre we use a software based Diabetes Tele Management System (DTMS) for those subjects willing for a regular follow up either through the telephone or internet. Trained staffs, dedicated telephone lines and networked computers enabled data collection. Subjects were highly motivated and taught on the rules of tele follow-up. They were instructed to report 4 blood sugar values (fasting, 2 hour post breakfast, 2 hour post lunch and 2 hour post dinner) by SMBG once in 3-7

days. Periodicity of tele follow up was determined by severity of diabetes, fluctuations in blood sugars and presence or absence of complications. Dosage titration of medications were carried out by the diabetologist at periodic intervals until the average fasting and post meal values reached below 110 and 135mg% respectively. Each tele conversation offered an opportunity not only for modification of dosages of medications but also for diabetes patient education on self management. Here we present the data of 41 patients who had a regular follow up, on insulins and oral drugs for 2 years, mean age group 54.87(range 32 - 76years) and with an initial mean A1c of 8.35%. The statistical analysis of the result shows that there is a significant reduction in average A1c level from the initial mean of 8.35% to a mean of 6.87% at 3 months (p=1.35x10⁻⁹) and 5.89% at 2 years (p=7.19x10⁻¹⁶). None of the subjects reported symptomatic hypoglycemia during the study period. Regular dosage titration with the help of DTMS based tele follow-up precludes the frequency of hospital visits and is a safe and cost effective method to achieve A1c below 6%, without any risks of serious hypoglycemia when the titration is carried out slowly and steadily at short intervals.

Fall in Mean A1c during tele titration

Time	Initial	Three Months	Two Year
n	41	41	41
HbA1c	8.35 ± 0.22	6.94 ± 0.14	5.90 ± 0.01

422-P

Accuracy of Real-Time Continuous Glucose Monitoring in the Mini-Med Paradigm System

JOHN MASTROTOTARO, GOPIKRISHNAN SOUNDARARAJAN, KEN COOPER, RAJIV SHAH, *Northridge, CA*

The Paradigm REAL-Time System (Medtronic MiniMed) combines a "smart" insulin pump with real-time continuous glucose monitoring (RT-CGM) in a single display device. The sensor is placed in the subcutaneous tissue and glucose data is transmitted via radio frequency (RF) to the pump, which also serves as the sensor display. The sensor measures glucose in the interstitial fluid every 5 minutes for up to 72 hours and the current glucose value is displayed, along with graphs, trends and rate of glycemic change information. All sensor and fingerstick BG meter information is downloaded and stored in a data management system (CareLink).

Sensor accuracy and reliability was evaluated in an open-label, 6-month, multi-center study with adult (mean age = 40 ± 11, 51% male), and adolescent (mean age = 14 ± 1.5, 59% female) subjects with type 1 diabetes using RT-CGM as an adjunct to SMBG. Glucose values calculated from sensor signals were compared to capillary BG concentrations from intermittent fingerstick testing (4/day) and were analyzed for accuracy.

A total of over 60,000 paired sensor/meter readings were analyzed in this study. Only 1% of the 7115 sensors failed initial start-up following the 2-hour initialization period. The type of accuracy analyses conducted and the results are presented in table 1.

Table 1: Analysis of Accuracy of 60,500 Paired Readings

Type of Analysis	Overall (N = 72)	Adults (N = 52)	Adolescents (N = 20)
Mean ARE (%±SD)	15.8±18.87	15.2±17.86	18.0±22.17
Median ARE (%)	10.9	10.5	12.4
Bias (mg/dL)	-2.3	-2.0	-3.4
CEG (% in A+B)	95.9	96.3	94.5
% Readings within ±20% Agreement	75.6	76.8	71.2

The accuracy of Medtronic RT-CGM sensors continue to improve as illustrated in this large outpatient trial. Based upon current standards of accuracy, we conclude the sensor glucose values are accurate and may provide meaningful information to improve diabetes management.

423-P

1,5-anhydroglucitol and Postprandial Hyperglycemia as Assessed by Self-Monitoring of Blood Glucose in Japanese Patients with Moderately Controlled Diabetes

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Objective: Postprandial hyperglycemia is often inadequately assessed in diabetes management. 1,5-anhydroglucitol (1,5-AG) as an index for urinary glucose is known to sensitively reflect glycemic excursions, as it varies even in relatively good glycemic states, and is thus thought to represent an appropriate index for evaluation of postprandial hyperglycemia. In this study, we investigated the relationship between postprandial hyperglycemia as assessed by self-monitoring of blood glucose and 1,5-AG in patients with moderately controlled diabetes.

Methods: A total of 36 patients with type 2 diabetes aged 41 to 75 years of age with stable glycemic control whose HbA_{1c} ranged between 5.5% and

For author disclosure information, see page A811.