Role of Continuous glucose monitoring system In optimizing glucose level in patients With type 1 diabetes mellitus

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ABSTRACT

The study could also compare the value of different therapeutic maneuvers. Splitting the evening dose provides better glycemic control with less hypoglycemia. Delaying night basal (after the midnight) showed less incidence of morning hypoglycemia.

KEY WORDS

Role _ monitoring _ patients

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List of Abbreviations

Ab	:	Antibodies
ACE		Angiotensin enzyme inhibitor
ADA	:	American Diabetes Association
AGA	:	Anti-gliadin antibodies
AITD	:	Autoimmune thyroid disease
BG	:	Blood glucose
BMI	:	Body mass index
CAD	:	Coronary artery disease
CGMS	:	Continuous glucose monitoring system
Cl^-	:	Chloride
CNS	:	Central nervous system
CSII	:	Continuous Subcutaneous Insulin Infusion
CVD	:	Cardiovascular disease
DCCT	:	Diabetes Control and Complications Trial
DirecNet	:	Diabetes Research in Children Network
DKA	:	Diabetic ketoacidosis
DM	:	Diabetes mellitus
DPT	:	Diabetes Prevention Trial
ENDIT	:	European nicotinamide diabetes intervention trial
FBG	:	Fasting blood glucose
FDA	:	Food and drug administration
GABA	:	Gama aminobutyric acid
GHb	:	Glycated hemoglobin
GIP	:	Gastric inhibitory peptide
GK	:	Liver glucokinase
GLP-1	:	Glucagon-like peptide 1
Gold CGM	:	Gold continuous glucose monitoring system.
HAAF	:	Hypoglycemia-associated autonomic failure
Hb	:	Hemoglobin
HbA1c	:	Glycosylated hemoglobin
HCO_3^-	:	Bicarbonate
HDL	:	High density lipoproteins

HLA	:	Human leukocyte antigen
HUNS	:	Hypoglycemia unawareness syndrome
IA-2	:	Islet cell antibody
IAAS	:	Insulin auto-antibodies
ICA	:	Islet cell antigen
IIT	:	Intensive insulin therapy
ISO		International Organization for Standardization
kg	:	kilogram
LDL	:	Low density lipoproteins
MAD	:	Mean absolute difference
MDI	:	Multiple dose injection
mEq/L	:	Millie equivalent per liter
Mg	:	Milligram
mg/dl	:	Milligram per deciliter
MHC	:	Major histocompatibility complex
ml.Osm.	:	Millie osmol
MODY	:	Maturity onset diabetes of the young
MRBS	:	Mean random blood sugar
nA	:	Nano angstrom
NIDDK	:	National Institute of Diabetes and Digestive and Kidney Diseases
NPH	:	Neutral protamine Hagedorn
PBG	:	Postprandial blood glucose
RT-CGMS	:	Real time -continuous glucose monitoring system
SC	:	Subcutaneous
SD	:	Standard deviation
Sig.	:	Significant
SMBG	:	Self monitoring blood glucose
T1DM	:	Type 1 diabetes mellitus
T2DM	:	Type 2 diabetes mellitus
IDF	:	International diabetes federation
TID	:	Three injections per day
UKPDS	:	United Kingdom prospective diabetes study

Introduction and aim of the work

Type 1 diabetes (T1DM) is one of the most common diseases of childhood. Even with the recent epidemic of type 2 diabetes, T1DM still accounts for approximately 85% of all cases of diabetes in children **(American Diabetes Association, 2010).**

Diabetic children still have health care costs twice as high as children who don't have diabetes. On the other hand, the investment in the field of diabetes management reduces the high future costs of long term diabetes related complications **(Icks et al., 2004)**.

Hyperglycemia is considered the primary pathogenic factor in development of micro and macrovascular complications **(Nishikawa et al., 2004).**

Retinopathy, neuropathy and nephropathy are the most common long term complications of diabetes mellitus **(Diabetes Control and Complication Research Group, 1993)**.

Pediatric Clinics of North America recorded marked decrement in the incidence rate of diabetes related retinopathy and nephropathy in the last decade due to more efficient glycemic control **(Sarah et al., 2005)**.

In addition, Diabetes Control and Complication Trial (DCCT), a large multicentric trial that involved 1441 patients with (T1DM) proved convincing evidence that improved glycemic control conferred a significant risk reduction for retinopathy, neuropathy and nephropathy **(Diabetes Control and Complication Research Group, 1993)**.

Intensive insulin therapy and continuous subcutaneous insulin therapy were applied to achieve euglycemia satisfactory to prevent microvascular and macrovascular complications **(Haller et al., 2005)**.

However, the major adverse effect of this regimen is the greatly increased risk of moderate to severe hypoglycemia **(Pickup et al., 2005)**.

The experience of hypoglycemia is probably the most hated and feared consequence of (T1DM) in