Continuous Glucose Monitoring System (CGMS) in the Diagnosis of Early Glycemic Abnormalities in High Risk Groups.

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Introduction

Continuous glucose monitoring (CGM) systems are an emerging technology that allows frequent glucose monitoring in real time.

Objectives

To assess the value of using CGM system (Medtronic) versus oral glucose tolerance (OGT) and glycated Hb (HbA1C) in the diagnosis of glycemic abnormalities (Prediabetes) in high risk groups

Methods and Patients

We performed OGT and monitored glucose for 72h using CGMS combined with 4-5 times/day SGM (before 3 meals and mid-night) and measured HbA1C concentration in 3 groups of children and adolescents with high-risk to develop glycemic abnormalities including:
A) 10 with morbidly obesity,
B) 16 with thalassemia major (TM) (on repeated blood transfusion and iron chelation)
C) 10 with nephrotic syndrome on high dose glucocorticoids (CS) for 4 weeks or more
D) As well as 10 normal children (controls).

Results and Discussion

None of the children and adolescents had elevated HbA1C level > 5.7%.

Glycemic abnormalities detected in all groups are summarized in table

CGMS diagnosed glycemic abnormalities in 60% of thalassemic patients 30% of obese patients and 30 % of patients on corticosteroids whereas OGTT diagnose glycemic abnormalities in 12% , 10% and 0% in the same patients respectively.
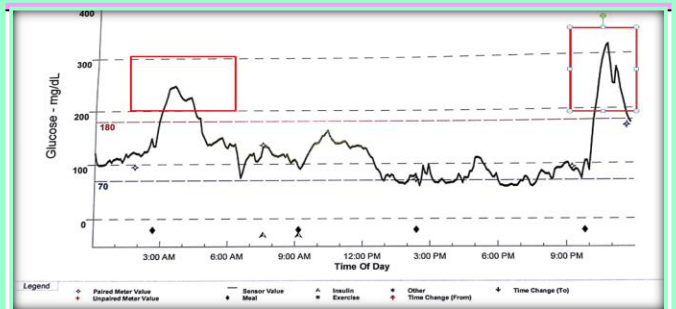
Conclusion

CGMS is more sensitive method to diagnose glycemic abnormalities (Prediabetes) in high risk patients compared to OGTT and HbA1C
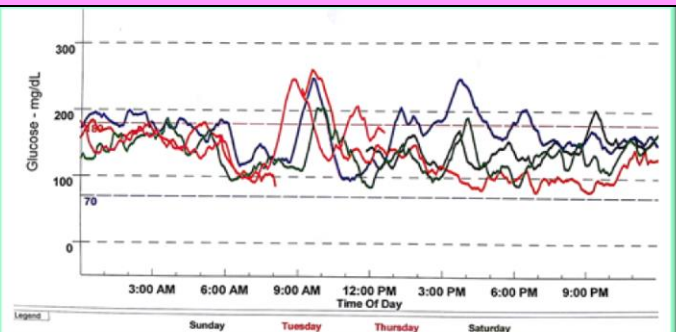
Results

	OGTT-IFG	OGTT-IGT	OGTT-DM	CGM-IFG	CGM-IGT
Normal	0%	0%	0%	0%	0%
TM	4/16	2/16	1/16	6/16	9/16
Obese	0/10	1/10	0/10	1/10	3/10
CS	0/10	0/10	0/10	0/10	3/10

Beta thalassemia with normal HbA1C and OGT and abnormal CGM

An adolescent on steroids with normal HbA1C , IGT and abnormal CGM

Obese adolescent with normal HbA1C , IGT and severe abnormalities in CGM

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