Continuous glucose monitoring (CGMS) versus oral glucose tolerance test (OGTT) and glycated hemoglobin(HbA1C) in the evaluation of glycemic abnormalities in an obese adolescent before versus after partial gastrectomy

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Introduction

Continuous glucose monitoring (CGMS) is widely used in the management of patients with Diabetes mellitus to monitor therapy. Its use as a diagnostic tool for early diagnosis of DM in high risk groups of patients is still

Objective & Methods

We compared CGMS (Medtronic) to OGTT and HbA1C in the follow-up of glycemic abnormality in an adolescent girl with morbid obesity and glycemic abnormalities before and after 2 months of partial gastrectomy.

Case: This 16 year old adolescent girl presented with obesity (weight 98 kg, height 158 cm , BMI = 39.2 kg/m2), acanthosis nigricans and nocturnal polyuria and polydipsia.

Trials to reduce weight through dieting, exercise and use of Metformin was not successful; (Patient lost 3 kg in 4 months).

Her fasting BG = 102 mg/dl but 2h BG after oral glucose (75 g) = 225mg/dl. (Impaired GT)

She underwent partial gastrectomy surgery. 2 months after surgery her weight decreased to 70 kg and BMI = 28 kg/m2.

Before surgery
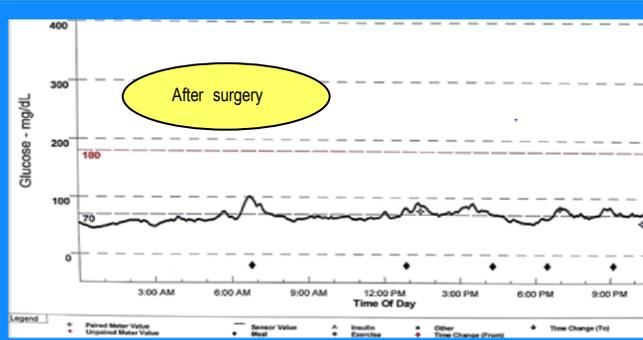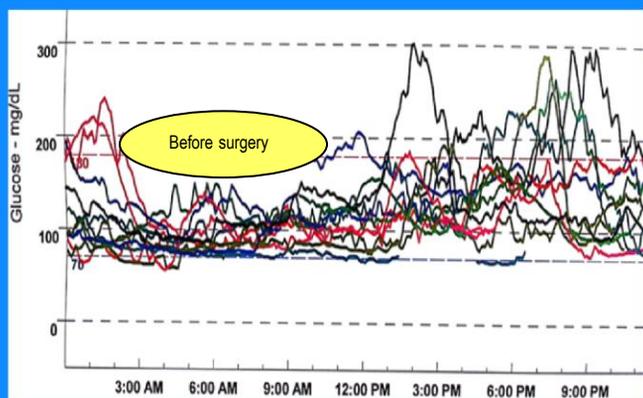
After surgery

Results

	Normal values mg/dl	Before Surgery mg/dl	8 weeks after Surgery mg/dl
Mean blood glucose (MBG)for 24 h	<117	92	78
BG 1 h before Breakfast	<108	89	69
BG 1h before lunch	<113	99	70
BG 1 h before dinner	<108	101	74
MBG 3 h after breakfast	<126	105	81
MBG 3 h after lunch	<121	145	69
MBG 3h after dinner	<126	162	130
Standard deviation of blood glucose (SDBG)	<25	42	17
Number of high excursions/day	0	2	0
The % of time > 7.8	<9%	19%	0%
OGTT – 0h	<111	121	109
OGTT-2h	<140	225	140
HbA1C %	< 6%	9.1%	6.7%

Discussion

Before surgery this obese patient with morbid obesity had normal FBG .

Her diabetic state was diagnosed using OGTT. CGMS showed the details of her glycemic abnormalities: high MBG 3 hours after lunch and dinner, high SD and number of high excursions and increased % of time > 7.8 mmol/L.

After surgery all abnormal CGMS criteria went back to normal during basal and postprandial states during real life.

Conclusion

CGMS appears to be efficient tool for diagnosing and monitoring glycaemia in morbidly obese children. CGMS tracing assured correction of all glycemic abnormalities in this patient after weight reduction in real-life.