

## Glucose Addiction and Glycemic Control in Type 2 Diabetes Mellitus: A Case Report

Odongkara Beatrice Mpora\*, Edonga Oliver, Adong Barbara, Odokonyero Francis, Wokorach Wilfred and Nyeko Christopher

Department of Paediatrics and Child Health, Faculty of Medicine, University of Gulu, 2 & 3 St Veronica's Clinic, Gulu, Uganda

\*Corresponding author: Odongkara Beatrice Mpora, Department of Paediatrics and child health, Faculty of Medicine, University of Gulu, 2 & 3 St Veronica's Clinic, Gulu, Uganda, Tel: +256772896397; E-mail: [beachristo2003@gmail.com](mailto:beachristo2003@gmail.com)

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### Introduction

According to Goodman, addiction is defined as a process whereby an individual behaves in such that the activity he or she indulges in produces both pleasure and provides escape from internal discomfort. It is employed in a pattern characterized by recurrent failure to control the behavior (powerlessness) and continuation of the behavior despite significant negative consequences (unmanageability) [1]. Dependence is defined as an adaptive state that develops in response to repeated drug administration, and is unmasked during withdrawal, which occurs when drug taking stops [2]. Many people are addiction to different things including psychoactive substances like heroine, morphine; internet; pornography and smoking, among others. Glucose addiction among diabetic patients has not been described in literature. We report a case of glucose addiction in a 59 year old man who had been to several doctors and hospitals with poorly controlled Type 2 diabetes.

### Case Background

OP, not real name is a 59 year old man with T2DM for 13 years now. He was referred following multiple consultations and admission in various health centers for poor glycemic control. He had history of inability to sleep for fear of dying from hypoglycemia at night. He kept 500gram glucose tin with him day and night taking it at any time he feels features of hypoglycemia even when his blood sugars were in the high ranges by his glucometer. The family reports increased irritability and aggression in the patient at any attempts to keep glucose and sodas or sweet drinks out of reach. There is a positive family history of hypertension and diabetes in his elder brother and cousins. He was on oral hypoglycemic (Metformin 500 mg twice and Pioglitazone 15 mg once) daily.

Clinically, he looked wasted as evidenced by redundant triceps skin folds, had above knee amputation (2 years earlier), no anaemic, jaundiced, and dehydrated. No acanthosis nigricans.

Axillary temperature was 36.7°C. Cardiovascular System Examination: capillary refill time was normal, pulse rate of 90 beats/minute, normal volume regular pulse, BP 196/102 mmHg, and was controlled to 140/73 mmHg after 5 days. Other systemic examinations were normal. Laboratory investigations revealed HbA1C of 16.1% which was very high, negative malaria and widal tests and normal urinalysis and full hemogram was normal.

Many bottles of sodas were retrieved during the period of treatment together with glucose tins on day three of treatment following rising blood glucose despite medication our team. The patient had symptoms of hypoglycemia at glucose levels above 15 mmol/l during the withdrawal period. The symptoms of withdrawal improved during

treatment and strict control of sweet drinks delivered by family members.

Symptoms subsided following successful treatment with insulin therapy. Currently the patient no longer takes sweet drinks including glucose. And he is happily living with family and gaining weight appropriately.

### Discussion

Type 2 Diabetes Mellitus (T2DM) or Non- Insulin Dependent Diabetes (NIDD) is a condition that results from an imbalance between insulin sensitivity and secretion, with resultant development of hyperglycemia following diminished insulin secretion by pancreatic beta cell in the face of insulin resistance [3].

The role of insulin resistance in type II diabetes could be a cause for this patient's persistent hyperglycemia, however, our patient was not wasted and had no signs of insulin resistance such as acanthosis nigricans and obesity [4]. However, a positive family history of T2DM another independent risk factor for insulin resistance in our patient. Studies have shown that, patients with positive family history of T2DM are more at risk of insulin resistance than those without [5,6]. Another possible explanation for hyperglycemia could be critical illness or febrile illness, which was ruled out in our patient as there was no fever, and even screening tests for common illness like malaria, urinalysis and widal for typhoid fever all negative [7].

Our patient however responded well to insulin therapy, indicating that he was still sensitive to insulin despite the fact that he may also have relative insulin deficiency given the long duration of type 2 Diabetes for 13 years. There is evidence that T2DM patients have declining pancreatic beta cell functions from 5 years after diagnosis onwards, requiring them to have additional exogenous source of insulin in addition to continuation with oral hypoglycemic drugs [8].

Addiction and or dependence is a state of physiological and psychological dependence on potentially harmful drug or substance. (Encarta dictionary) Our patient had a belief that without taking glucose, he would die of hypoglycemia and every symptom felt was attributed to low glucose. He was unable to sleep fearing to die in sleep from hypoglycemia so he indulged in consuming large quantities of glucose over the night all perpetuating chronic hyperglycemic states. Following close follow-up and treatment supervision under our care team, the patient stabilized and neither indulges in glucose consumption nor fears to die of hypoglycemia again.

There is no data on glucose addiction among diabetic patients and no reported cases also in psychiatry. This is a unique case to help diabetes specialists and those caring for diabetic patients to be on the lookout for patients with poor metabolic control despite all efforts to

optimize metabolic control. This should be done after ruling out the effects of other factors that affect glycemic control.

## Declaration

I declare that there is not conflict of interest in this case.

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