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Complete Recovery from Type II Diabetes- A Case Report

Varshini Radhakrishnan[1]†, Audre Preena Maria Sundar Raj[1]†, Kanish Akash Rajkumar[2], Rajendra Retnam Kanakaretnam[3], Shivanjani Ponbala Sudhakar[4], Sudhakar Sivasubramaniam[1]*

[1]Department of Biotechnology, Manonmaniam Sundaranar University, Tirunelveli–627012, Tamil Nadu, India
[2]Department of Pharmacy practice, Dayananda Sagar University, Bengaluru–560078, Karnataka, India
[3]Retnam's Brain & Spine Centre, South Bypass Road, Vannarpettai, Tirunelveli-627009, Tamil Nādu, India
[4]No 6 Zion Nagar, Xavier's Colony Extension, Tirunelveli, Tamilnadu-627005, India.

† These authors contributed equally to this work.
* Corresponding Author:
Sudhakar Sivasubramaniam,
Department of Biotechnology,
Manonmaniam Sundaranar University,
Tirunelveli, Tamil Nadu-627012, India.
Phone: +919940998936
E-mail: sudhakar@msuniv.ac.in
Orcid id: 0000-0002-1648-5474

ABSTRACT

This case report presents the remarkable clinical journey of a 46-year-old schizophrenic patient completely cured from diabetes. The schizophrenic patient developed diabetes at the age of 36, which persisted for four years. During this period, standard diabetes management was implemented along with her antipsychotics and antidepressants for schizophrenia. However, a significant turning point occurred when the patient experienced a hypoglycemic shock, prompting the discontinuation of her diabetes medications. Following this event, the patient's blood glucose levels spontaneously normalized forever, leading to an intriguing observation of apparent cure of diabetes. This case highlights the complex interplay between mental health conditions, diabetes, and medication effects, underscoring the need for comprehensive research to understand the underlying mechanisms that led to this unexpected outcome.

KEYWORDS: Schizophrenia, Diabetes remission, Hypoglycemic shock, Antipsychotics

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INTRODUCTION

Schizophrenia is a severe mental illness characterized by complex behavioral and cognitive disorder. Symptoms include a mix of hallucinations, delusions, and severely abnormal thinking and behavior. This condition is observed in about 1% of the population and among them the prevalence of obesity and diabetes is more significant than that in the general population [1].

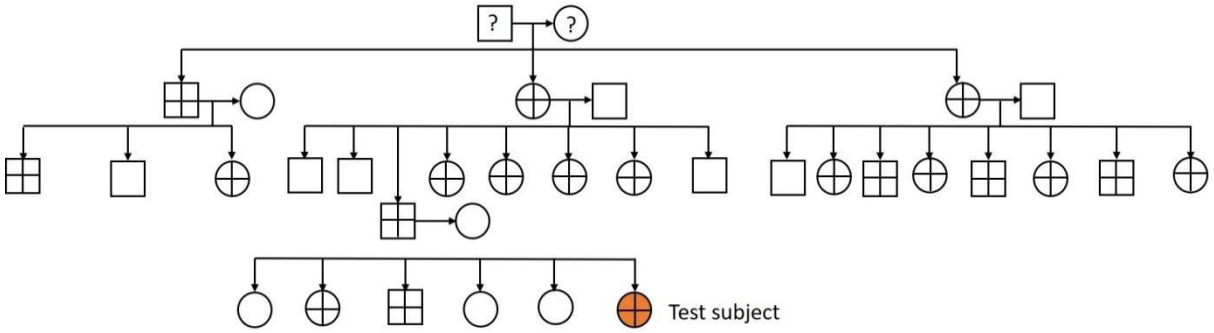
The heightened occurrence of these conditions is attributed to a combination of various factors. Essential among them are second-generation antipsychotics (SGAs), particularly clozapine [2], an inherent vulnerability to diabetes within the schizophrenia population, and also having suboptimal dietary patterns and limited participation in physical activities, which further correlates with the onset of diabetes [3]. The aforementioned three factors align with the patient's profile, making it challenging to pinpoint a singular cause for the observed occurrence in our case, which is not considered in our study.

Despite the increasing global prevalence of diabetes, a definitive cure remains elusive. Current treatments for type 2 diabetes encompass medications such as metformin, sulfonylureas, glitazones, glinides, gliptins, and gliflozins [4]. Non-pharmacological approaches, including tailored dietary adjustments and regular physical activity, as well as prioritizing sleep quality, have demonstrated potential in diabetes control. However, a lasting solution to diabetes management is yet to be achieved and hence further research and comprehensive strategies are in need to address the global diabetes burden.

This case report examines a 46-year-old schizophrenic patient who had diabetes for four years. The study delves into the patient's lifestyle, family diabetes history, and the specific medication regimen employed, which contributed to the successful resolution of diabetes.

CASE PRESENTATION

A 46-year-old schizophrenic patient with a prolonged family history of diabetes is the case at study. As represented in Fig 1, most of her family members are victims to type-2 diabetes, developing at an age range of about 45 to 55. Almost 71% of the known family members developed diabetes. No other family member had schizophrenia with respect to available data.



[Fig.1 The pedigree represents the family tree of the patient marked in red. The figures with crosses are the members with diabetes.]

For easier reference the patient's lifetime was divided into three distinct time periods. The first section being the time since the onset of schizophrenia (year 1992) to the time when the patient was first diagnosed with diabetes (year 2011). The second section represents the time between the onset of diabetes to the time when she had a hypoglycemic shock (year 2014 Dec). The third part extends from the time when the hypoglycemic shock occurred until her death.

BEFORE DIABETES

Since the time she was diagnosed with schizophrenia she was treated with Chlorpromazine (a first-generation antipsychotic). Chlorpromazine was the primary antipsychotic used until 2010 along with Lithium carbonate and divalproex for the treatment of maniac episodes while alprazolam as a sleep inducer (Table 1).

On 2010, her medication was changed owing to her worsened mental state. She was advised to switch to second generation antipsychotics (SGAs) namely quetiapine, amisulpride, aripiprazole and clozapine and Zolpidem was given as a sleep inducer (Table 1). This was continued until the onset of diabetes.

During diabetes

In 2011, at 36 years old, she was diagnosed with diabetes having glucose level above 400mg/dl and she was under the same medication that she was on earlier while she was diagnosed with diabetes but aripiprazole was removed from her medication and was replaced by amoxapine (D2 receptor antagonist) while the other antipsychotics were continued with the same dosage. These were administered along with Metformin and glibenclamide as antidiabetic medication. This continued for about 3 years without any changes until December of 2013. On the first month of 2014, some changes were made in the prescription, like amoxapine was terminated and sertraline was added to the medication as mentioned in table 1. In about a month without any specific reason, Zolpidem, clonazepam and sertraline were removed from the medication while Desvenlafaxine was added to the treatment.

Disappearance of diabetes

On December 2014 (age 40), the patient faced a sudden hypoglycemic shock, with profuse sweating and eventually fell unconscious. She was admitted to a hospital and upon inspection the doctors advised to temporarily stop the uptake of metformin and glibenclamide and eventually the patient's blood sugar levels stabilized. Since then, the patient is just under the same medication with her blood glucose level ranging between 100 to 120 mg/dl despite her sedentary lifestyle.

S. No	Generic name	Dosage	day	afternoon	eve	night	per day in mg
Medication followed by the patient along with the dosage until 2010							
1	Divalproex	500 mg	0	1	0	1	1000
2	Lithium Carbonate	400 mg	0	0	0	1	400
3	Chlorpromazine	100 mg	0	0	0	1	100
4	Alprazolam	0.25 mg	1	0	0	0	0.25
Medication changed to SGAs after the worsened mental state during 2010							
1	Quetiapine	300 mg	0	1	0	1	600
2	Trihexyphenidyl	5 mg	0	1	0	1	10
3	Amisulpride	300 mg	0	0	0	1	300
4	Aripiprazole	30 mg	0	0	0	1	30
5	Clozapine	50 mg	0	0	0	1	50
6	Zolpidem	10 mg	0	0	0	1	10
Medication prescribed to the patient after she was diagnosed with diabetes on 2011							

1	Quetiapine	300 mg	0	1	0	1	600
2	Trihexyphenidyl	5 mg	0	1	0	1	10
3	Amisulpride	300 mg	0	0	0	1	300
4	Clozapine	50 mg	0	0	0	1	50
5	Clonazepam	0.5 mg	0	0	0	1	0.5
6	Zolpidem	10 mg	0	0	0	1	10
7	Amoxapine	50 mg	0	0	0	1	50
8	Metformin	500 mg	1	0	0	1	1000
9	Glibenclamide	5 mg	1	0	0	1	10
Change in medication during December 2013 on the course of diabetes							
1	Quetiapine	300 mg	0	1	0	1	600
2	Trihexyphenidyl	5 mg	0	1	0	1	10
3	Amisulpride	300 mg	0	0	0	1	300
4	Clozapine	50 mg	0	0	0	1	50
5	Desvenlafaxine	50 mg	0	0	0	1	50
6	Metformin	500 mg	1	0	0	1	1000
7	Glibenclamide	5 mg	1	0	0	1	10

[Table 1: The overview of all the drugs administered over the course of 11 years before, during and after diabetes.]

DISCUSSION

In the case study, the patient consumed both antipsychotics and antidepressants, which are known to cause hypoglycemia [5-8]. Specifically, the patient consistently used quetiapine from 2010 until death which is reported to lead to hypoglycemia in some patients, even those without a history of diabetes mellitus [9-12]. Consequently, the patient unintentionally followed an intermittent fasting pattern, where she would sleep for most of the day and only wake up at dawn to have her meals. Intermittent fasting is well known to improve glucose metabolism [13].

An important aspect to highlight in this case is the potential role of prescribed medication, such as Quetiapine acting independently or in synergy with other drugs (Quetiapine + Metformin + Glibenclamide), possibly complemented by the patient's unintentional intermittent fasting pattern, in contributing to the resolution of diabetes. This unique case prompts the speculation that this synergy might have significantly contributed to the cure of diabetes, although further research is essential to validate these hypotheses.

CONCLUSION

This case report presents a rare and intriguing occurrence where a patient with schizophrenia and diabetes, who was consistently taking quetiapine along with metformin and glibenclamide with intermittent fasting, experienced an unexpected resolution of diabetes. The remarkable disappearance of type 2 diabetes cannot be easily explained. The hypothesis of quetiapine use or its synergistic effect with metformin and glibenclamide accompanied with unintentional intermittent fasting pattern possibly playing a role in the resolution of diabetes remains a compelling and unique observation in this case. Further comparative studies are needed to fully understand the mechanisms behind this unexpected outcome and its potential implications for diabetes management.

Ethics declarations

Competing interest

The authors have no competing interests.

Consent to participate

In the event of the patient's demise, consent for this case report was obtained from the patient's legal guardian [Sudhakar Sivasubramaniam], who provided authorization for the use of the patient's medical information in this publication. Privacy and confidentiality of the patient's identity and medical history were rigorously maintained.

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