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Diabetes Case Reports

Case Report

Remission of Type 2 Diabetes in a Bipolar Patient on Atypical Antipsychotic Therapy: A Case Report

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ABSTRACT

Background: To draw attention on the management of patients with Type 2 diabetes treated with atypical neuroleptic drugs and to document that remission of the endocrinologic picture can take place even in patients under this treatment. To the best of our knowledge, this is the first report to show the remission of Type 2 diabetes after starting therapy with atypical antipsychotic.

Case Presentation: We describe a patient who was diagnosed with Type 2 diabetes in 2001 and was in treatment with insulin. We started in 2014 an atypical antipsychotic therapy for bipolar disorder at the Fondazione Policlinico Gemelli with a parallel change in life style (i.e. diet and multi-weekly physical activity). In 2019, after 4 years of integrated diabetic psychiatric therapy, the endocrinological picture of the patient entered into remission, the patient has been able to stop insulin therapy and is currently receiving only oral antidiabetic drug.

Conclusions: Despite evidence supports association between antipsychotic drugs and Type 2 diabetes in psychiatric patients, causality has not been established yet. As shown by this case report, lifestyle could be at the basis of the high prevalence rates of Type 2 diabetes in these patients and also linked to the possibility of its remission. It is necessary to carry out studies to better clarify the association between atypical neuroleptic drugs and Type 2 diabetes onset considering the high morbidity and mortality of patients with Type 2 diabetes, particularly during the current SARS-CoV-2 pandemic and the highest lethal rate of infection in these patients.

Keywords: Type 2 diabetes; Atypical antipsychotics; Bipolar disorder; Comorbidity; Lifestyle; Insulin; Oral antidiabetic drugs

INTRODUCTION

The association between diabetes and mental illness has been identified at least from the second half of the 18th century [1]. Although these observations have been subsequently confirmed by further studies, there have been difficulties in assessing the prevalence rates of Type 2 diabetes in patients with severe mental illness [2]. There have been few studies that have done a widespread screening for Type 2 diabetes in psychotic patients nevertheless, it seems that the risk of developing Type 2 diabetes in this group of patients is increased of two-three fold [3,4]. Studies of drug naïve first episode psychosis patients have been informative when considering the underlying rates of abnormal glucose metabolism [5]. In the general population, the etiopathogenesis of Type 2 diabetes is related to lifestyle: more specifically, being overweight (visceral overweight and obesity) and/or physical inactivity are the causes of this pathology [6]. Excess visceral fat behaves like an endocrine gland releasing

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adipokines, FFA, glycerol and lactate which prevent the action of insulin on peripheral cells. To compensate this situation, the pancreas produces more insulin which acts inadequately leading to hyperinsulinemia, insulin resistance and hyperglycemia [7]. The mechanisms that underlie the increased prevalence of Type 2 diabetes in patients with severe mental illness are environmental factors, such as less healthy lifestyles and poorer health care [8]. Much of the increased risk can be ascribed to risk factors, such as family history, physical inactivity and poor diet like in the general population [9].

Poverty and poor-quality nutrition also increase the risk of developing Type 2 diabetes. Patients with severe mental illness consume a diet with a higher fat content and reduced amount of fibre than the general population, whereas fruit and vegetable intake is decreased [10]. The findings that psychotic disorders are associated with Type 2 diabetes have important implications for the critical analysis of reports linking antipsychotic drugs with abnormal glucose metabolism; any association between a drug and Type 2 diabetes may merely reflect the coexistence of Type 2 diabetes and psychotic disorders within the same patient [11].

Reports linking atypical neuroleptics drugs with Type 2 diabetes have been published since the early 2000s and concerns have been raised that these drugs may lead to deterioration in the physical health of patients with acute mental illness [12].

Despite the current interest in the association between the atypical antipsychotic drugs and Type 2 diabetes, the first reports of a link between neuroleptics and diabetes were made in the 1950s [13]. In the early 1960s, this association was commonly known as phenothiazine diabetes.

The problem has long been forgotten, until it has been observed that atypical antipsychotic drugs were also associated with impaired glucose tolerance and Type 2 diabetes. Nowadays evidence for a link between antipsychotic drugs and Type 2 diabetes can be obtained from case reports, drug safety studies, pharmacoepidemiological studies and prospective studies.

More than 14 case reports linking atypical antipsychotic therapy with Type 2 diabetes are published in the literature, but no one describe the remission of Type 2 diabetes after the starting of antipsychotic therapy. All case reports indicate that the beginning of antipsychotic therapy promotes the onset of Type 2 diabetes. The aim of this paper is to draw attention on the management of patients having Type 2 diabetes treated with atypical neuroleptic drugs and to document that remission of the endocrinologic picture can take place even in patients under this treatment. To the best of our knowledge, this is the first report to show the remission of Type 2 diabetes after starting therapy with atypical antipsychotic.

CASE PRESENTATION

A 60-year-old man was evaluated for the first time at the Policlinico Gemelli Outpatient Psychiatry Department in May 2014 after the clinical discharge from the Nephrology Department of the Integrated Columbus Complex, where he was admitted due to the onset of acute renal failure occurred as a result of metformin ingestion for suicidal purposes. In anamnesis, he reported the first onset of a mood disorder characterized by mixed symptoms in 2010 when he was treated with unspecified psychopharmacological therapy with partial benefit. The patient had comorbid Type 2 diabetes diagnosed in 2001 and was treated with fast-acting insulin aspart 8 international IU subcutaneously after breakfast, fast-acting insulin aspart 16 international IU subcutaneously after lunch, fast-acting insulin apart 12 international IU subcutaneously after dinner, and insulin glargine 32 IU subcutaneously before the night. He also presented arterial hypertension treated with Valsartan 80 mg b.i.d. The patient's height is 179 cm and at the first visit the patient's weight was 114 kg (BMI 35.6 second class obesity). Following the first psychiatric visit, the patient started psychopharmacologic therapy with valproic acid 1500 mg day, Quetiapine 300 mg day and paroxetine 20 mg day, with outpatient checks every 15 days. Starting from the first outpatient psychiatric check an action was undertaken in parallel to explain to the patient the importance of lifestyle in managing Type 2 diabetes (integrated diabetes care). In particular, he was prescribed a diet and was invited to undertake a multi-weekly physical activity in order to try to induce weight reduction and the remission of Type 2 diabetes. The patient showed an initial reluctance regarding the recommendations about the changes of lifestyle, but after the establishment of a relationship of trust with the treating physician, began to follow the indications. To date, the patient carries out as much physical activity as possible and induced weight loss of about 30 kg through a diet therapy; the patient's current weight is 86 kg. Although he is still overweight (BMI 26.9), he was able to stop taking insulin subcutaneously and is currently on metformin 1500 mg/day. He is still in psychopharmacological treatment with valproic acid 1500 mg/day, Quetiapine 300 mg/day and paroxetine 20 mg/day but has maintained the reduction of body weight and has not been taking insulin for 1 year.

RESULTS

Laboratory test

As shown in the table, results of the laboratory tests carried out by the patient one year after the beginning of treatment and 4 years after starting the integrated diabetic psychiatric therapy confirmed the reduction of fasting blood sugar, LDL cholesterol, triglycerides and increase in HDL cholesterol in Table 1 with a change in the risk of cardiovascular adverse events from 34.6% to 26.5% [14].

Table 1: Results of laboratory tests one year and 4 years after the integrated diabetic psychiatric therapy.

Laboratory test			
Date	20-03-2015	05-02-2019	n.v
Glucose	125 mg/dl	88 mg/dl	70-100 mg/dl

Creatinin	23 mg/dl	1.17 mg/dl	0.70-1.30 mg/dl
Total Cholesterol	203 mg/dl	180 mg/dl	100-200 mg/dl
HDL Cholesterol	28 mg/dl	61 mg/dl	35-80 mg/dl
LDL Cholesterol	139 mg/dl	106 mg/dl	65-160 mg/dl
Triglycerides	229 mg/dl	64 mg/dl	50-200 mg/dl

DISCUSSION

The link between atypical antipsychotic drugs and the development of Type 2 diabetes is a controversial topic debated in the literature [11,15]. The available evidence supports an association between the use of antipsychotic drugs and impaired glucose metabolism, but causality has not been established yet [16]. Case reports and retrospective pharmaco-epidemiological studies suggest that atypical antipsychotic medications are associated with an increased risk of glucose abnormalities or Type 2 diabetes [17]. Many reports demonstrate improvements in glycaemic control after stopping the atypical neuroleptic therapy. Data from a perspective point of view examining the relationship between atypical antipsychotic drugs and diabetes began to emerge in 2003 but are not conclusive. Evaluation of the ascribable risk associated with atypical antipsychotic drugs is low [18]. At present there are over 14 case reports in literature linking atypical antipsychotic therapy with Type 2 diabetes. To the best of our knowledge, this is the first report to show the remission of the endocrinologic picture after starting therapy with atypical antipsychotics.

In our case a patient with a diagnosis of Type 2 diabetes from 13 years, after starting neuroleptic drug therapy, showed a period of initial maintenance of the previous weight and stability of Type 2 diabetes [19]. After the establishment of a relationship of trust with the carers, he displayed an improvement in weight control and the remission of the Type 2 diabetes. He lost 30 kg and went from second-level obesity to overweight, stopped insulin therapy, switched to oral antidiabetic drug, and showed improved blood chemistry and glycemic control [20-22]. We want to emphasize that the patient described, before starting the integrated therapy, was not aware of the possible remission of Type 2 diabetes through the change of lifestyles. As a matter of fact, psychiatric patients often have less knowledge or attention than the general population for their physical health. People with mental illness could be much prone to develop physical illness than general population, besides owing to modifiable lifestyle factors, also for the poorer access to and quality of received health care [23]. This proves how important is in these patients to stress the aspect of psychiatric care together with the attention for the cure of physical diseases, in particular Type 2 diabetes. More over because psychiatric disorders have an increased risk of mortality compared with the general population, larger than or comparable to “heavy smoking” and these higher mortality risks translate into substantial 10-20 years reductions in life expectancy.

CONCLUSION

In our report, we show how fundamental to focus on modifiable lifestyle factors also in patients with mental illness and Type 2 diabetes so that Type 2 diabetes can enter into remission. As the association between the use of antipsychotic drugs and impaired glucose metabolism is evident, but causality has not been established yet, it is crucial to carry out studies that clarify this link considering the high morbidity and mortality of patients with Type 2 diabetes in the general population and the highest risk of fatal infection in these patients during the current SARS-CoV-2 pandemic.

DECLARATION

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due privacy reasons but are available from the corresponding author on reasonable request.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest

FUNDING

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INFORMED CONSENT AND IRB APPROVAL

The institute’s internal review board approved the study protocol. The study was conducted in accordance with the Declaration of Helsinki, and the participant signed a written informed consent form.

AUTHOR CONTRIBUTIONS

All authors contributed equally to the writing of the manuscript

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