

Severe New-Onset Diabetic Ketoacidosis in a Young Adult Treated with Quetiapine: A Case Report

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Abstract

Case Report

Second-generation antipsychotics are associated with metabolic disturbances, of which diabetic ketoacidosis (DKA) is a rare but serious complication. Quetiapine, usually considered to carry an intermediate metabolic risk, has been associated with hyperglycemic emergencies in pharmacovigilance data. We report the case of a 21-year-old man with a normal body mass index (22.3 kg/m²) and no personal or family history of diabetes, who had been receiving quetiapine 100 mg/day for nine months without weight gain. He presented with a 48-hour history of abdominal pain, polyuria, polydipsia, and vomiting, with altered consciousness (Glasgow Coma Scale score of 14). Blood glucose was 6 g/L (33.3 mmol/L), ketonuria was 3+, and arterial blood gas analysis revealed severe metabolic acidosis (pH 6.92; bicarbonate < 3 mmol/L). Exudative tonsillitis was a possible precipitating factor. The patient improved with fluid resuscitation, continuous intravenous insulin, potassium replacement, and antibiotic therapy, and quetiapine was discontinued. The causality of quetiapine was rated as probable on the Naranjo scale. The absence of overweight and weight gain suggests that adiposity-independent mechanisms may be involved, although new-onset autoimmune type 1 diabetes could not be excluded without immunological testing. No glucose monitoring had been documented during nine months of treatment. This case highlights that severe DKA may reveal diabetes during quetiapine therapy and supports guideline-recommended glucose screening in all patients receiving second-generation antipsychotics, regardless of body weight.

Keywords: Quetiapine, diabetic ketoacidosis, second-generation antipsychotics, new-onset diabetes, adverse drug reaction, pharmacovigilance.

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INTRODUCTION

Second-generation antipsychotics are well known to be associated with metabolic adverse effects, including weight gain, dyslipidemia, insulin resistance, and type 2 diabetes [1-3]. Diabetic ketoacidosis (DKA) represents the most extreme form of this metabolic toxicity and, although rare, may be life-threatening. A systematic review published in 2026, including 151 reports of hyperglycemic emergencies occurring during antipsychotic treatment, identified quetiapine as the suspected drug in approximately one in nine cases of DKA (11.4%) [4], and the underlying mechanisms have recently been reviewed [5].

Traditionally considered to have an intermediate metabolic risk, lower than that of clozapine, olanzapine and risperidone, quetiapine has nevertheless shown the highest disproportionality signal for DKA among the four second-generation antipsychotics studied in a recent analysis of the US Food and Drug

Administration Adverse Event Reporting System (FAERS) database [6]. We report the case of a young adult of normal body weight in whom severe DKA revealed new-onset diabetes after nine months of treatment with quetiapine 100 mg/day.

CASE REPORT

A 21-year-old man with a body mass index of 22.3 kg/m² and no personal or family history of diabetes had been followed in psychiatry for nine months and treated with quetiapine (Seroquel®) 100 mg/day as monotherapy, without any dose adjustment. His body weight had remained stable throughout treatment. Two days before admission, he developed diffuse abdominal pain, polyuria, polydipsia, and repeated vomiting, followed the next day by altered consciousness, which prompted his presentation to the emergency department.

On arrival, the patient was obtunded (Glasgow Coma Scale score of 14), with Kussmaul breathing and

an oxygen saturation of 98% on room air. Blood pressure was 130/80 mmHg and heart rate was 110 beats/min. The abdomen was soft and non-tender. Ear, nose, and throat examination revealed exudative tonsillitis, and the rest of the physical examination was unremarkable.

Capillary blood glucose was 6 g/L (33.3 mmol/L), and urine ketones were 3+. Arterial blood gas analysis showed high anion gap metabolic acidosis (pH 6.92; PaCO₂ 17 mmHg; bicarbonate < 3 mmol/L), with a lactate level of 0.8 mmol/L. The 2024 international consensus criteria for DKA were met, with severe DKA based on the degree of acidosis and the altered level of consciousness [7]. Laboratory tests also showed leukocytosis at 26 770/mm³ with neutrophil predominance, a C-reactive protein level of 38.3 mg/L, and a procalcitonin level of 3.6 ng/mL. Urine culture was sterile. Serum lipase and abdominal ultrasound were normal.

Treatment consisted of rehydration with isotonic saline, continuous intravenous insulin infusion via syringe pump, and potassium replacement guided by serum potassium and electrocardiographic monitoring [7]. Antibiotic therapy with amoxicillin-clavulanic acid (1 g every eight hours) was also initiated for the tonsillitis. The patient improved rapidly, with normalization of pH (7.40) and an increase in bicarbonate to 18 mmol/L. Blood glucose decreased to 1.22 g/L (6.8 mmol/L), and ketonuria decreased to 1+. He was then switched to basal insulin (12 units in the evening) without treatment-related complications. Quetiapine was discontinued, and the patient was transferred to the endocrinology department for diabetes classification and adjustment of insulin therapy. The results of the etiological diabetes work-up and subsequent follow-up data could not be obtained. A multidisciplinary discussion with the psychiatry team was initiated to switch to an antipsychotic with a lower metabolic risk.

DISCUSSION

Several findings supported a possible role of quetiapine, including an exposure duration compatible with previously published data, the absence of a personal or family history of diabetes, and the absence of weight gain during treatment. The Naranjo scale [8] yielded a score of 5, corresponding to probable causality. However, this result should be interpreted with caution. Resolution of ketoacidosis was attributable to insulin therapy rather than to discontinuation of the drug alone, and the dechallenge criterion can only be assessed during follow-up. New-onset autoimmune type 1 diabetes cannot be excluded before completion of the diabetes classification workup. Rechallenge will not be performed for ethical reasons. Moreover, the concomitant upper respiratory tract infection was a potential precipitating factor for DKA.

Glucose dysregulation associated with atypical antipsychotics involves multiple mechanisms [2,9]. The best-documented pathway is indirect: antagonism of H₁ and 5-HT_{2C} receptors promotes weight gain and insulin resistance. A direct, weight-independent pathway may involve blockade of muscarinic M₃ receptors on pancreatic beta cells, impairing insulin secretion [3,9]. In our patient, the absence of overweight and weight gain makes a mechanism mediated exclusively by adiposity less likely and suggests the possible involvement of weight-independent mechanisms, particularly impaired beta-cell function [4,5].

Cases of DKA associated with quetiapine remain less frequently reported than those associated with olanzapine or clozapine. The time to onset ranges from one day to 36 months after treatment initiation [4], which justifies prolonged vigilance. The disproportionality signal observed in FAERS [6] may reflect an intrinsic effect of the drug, but also its very widespread use, including off-label and at moderate doses. As early as 2004, a pharmacovigilance case series reported that half of quetiapine-associated hyperglycemia cases corresponded to new-onset diabetes, with half of these presenting with DKA [10].

The American Diabetes Association recommends, with a level B grade of evidence, screening for prediabetes and diabetes in all patients receiving second-generation antipsychotics at treatment initiation, 12 to 16 weeks later, and annually thereafter [11]. The National Institute for Health and Care Excellence (NICE) recommends a comparable schedule using fasting blood glucose or glycated hemoglobin [12]. However, adherence to these recommendations remains insufficient in clinical practice, and our patient had no documented glycemic monitoring during nine months of treatment. This case highlights several important lessons. Screening should be performed regardless of body mass index and antipsychotic dosage, as our patient had no clinical risk factor. Educating patients and their families about warning signs, such as polyuria, polydipsia, weight loss, abdominal pain, and vomiting, is essential. Finally, coordination between psychiatrists, endocrinologists, and emergency physicians, as well as reporting to pharmacovigilance centers, should be systematic.

This report has several limitations. Diabetes classification, including C-peptide and anti-GAD, anti-IA2, and anti-ZnT8 autoantibody testing, as well as endocrinology follow-up data could not be obtained, so new-onset autoimmune type 1 diabetes cannot be excluded. The concomitant infection was also a potential trigger of DKA. Finally, a single case and a pharmacological causality signal cannot establish a formal causal link between quetiapine and DKA.

CONCLUSIONS

This case illustrates that severe new-onset diabetic ketoacidosis may occur during quetiapine

treatment in a young adult of normal body weight, even at a moderate dose and without prior weight gain. Although a single case cannot establish a definitive causal relationship, the temporal association and the probable Naranjo score warrant clinical attention in patients receiving second-generation antipsychotics.

Glucose screening at treatment initiation, after three months, and annually should be applied to all patients receiving these drugs, regardless of body weight or dose. Emergency physicians should consider diabetic ketoacidosis in any patient taking an antipsychotic who presents with abdominal pain, vomiting, or altered consciousness, and every suspected case should be reported to pharmacovigilance centers.

DECLARATIONS

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REFERENCES

- De Hert M, Detraux J, van Winkel R, Yu W, Correll CU: Metabolic and cardiovascular adverse effects associated with antipsychotic drugs. *Nat Rev Endocrinol*. 2011, 8:114-26. 10.1038/nrendo.2011.156
- Carli M, Kolachalam S, Longoni B, *et al.*, Atypical antipsychotics and metabolic syndrome: from molecular mechanisms to clinical differences. *Pharmaceuticals (Basel)*. 2021, 14:238. 10.3390/ph14030238
- Holt RIG: Association between antipsychotic medication use and diabetes. *Curr Diab Rep*. 2019, 19:96. 10.1007/s11892-019-1220-8
- Haddad N, Farhat N, Gravel CA, *et al.*, Antipsychotic drugs and the risk of diabetic complications: a systematic review of clinical evidence. *J Clin Med*. 2026, 15:3107. 10.3390/jcm15083107
- Bae H, Lee JH, Je S, Lee SH, Choi H: Diabetic ketoacidosis associated with second generation antipsychotics: a case study and review of literature. *Psychiatry Investig*. 2024, 21:111-22. 10.30773/pi.2023.0301
- Liang H, Mao D, Zhao Y, Zhou R: Study on disproportionality in the detection of potential signals between quetiapine and diabetic ketoacidosis. *Eur J Clin Pharmacol*. 2025, 81:1473-9. 10.1007/s00228-025-03895-7
- Umpierrez GE, Davis GM, ElSayed NA, *et al.*, Hyperglycaemic crises in adults with diabetes: a consensus report. *Diabetologia*. 2024, 67:1455-79. 10.1007/s00125-024-06183-8
- Naranjo CA, Busto U, Sellers EM, *et al.*, A method for estimating the probability of adverse drug reactions. *Clin Pharmacol Ther*. 1981, 30:239-45. 10.1038/clpt.1981.154
- Whicher CA, Price HC, Holt RIG: Mechanisms in endocrinology: antipsychotic medication and type 2 diabetes and impaired glucose regulation. *Eur J Endocrinol*. 2018, 178:R245-58. 10.1530/EJE-18-0022
- Koller EA, Weber J, Doraiswamy PM, Schneider BS: A survey of reports of quetiapine-associated hyperglycemia and diabetes mellitus. *J Clin Psychiatry*. 2004, 65:857-63. 10.4088/jcp.v65n0619
- American Diabetes Association Professional Practice Committee: 2. Diagnosis and classification of diabetes: Standards of Care in Diabetes—2026. *Diabetes Care*. 2026, 49:S27-49. 10.2337/dc26-S002
- Psychosis and schizophrenia in adults: prevention and management (CG178). National Institute for Health and Care Excellence. (2014). Accessed: October 4, 2026: <https://www.nice.org.uk/guidance/cg178>.