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(CASE REPORT)

Addressing olanzapine-induced diabetic ketoacidosisin a major depressive disorder case

EL FELLAH SARA *, ADALI IMANE and MANOUDI FATIHA

Research team for mental health, University Psychiatric Service IBN Nafis Hospital, Mohamed VI University Hospital, Marrakech. Morocco.

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Abstract

This case study highlights a critical incidence of olanzapine-induced diabetic ketoacidosis (DKA) in a 36-year-old female patient treated for major depressive disorder with psychotic features. The patient developed severe DKA after the initiation of olanzapine, despite initially normal metabolic parameters and a low starting dose. This report underscores the acute metabolic derangement facilitated by olanza- pine, necessitating a comprehensive and urgent medical approach. The clinical intervention involved discontinuing olanzapine and initiating a multidisciplinary treatment strategy, which included medical management of DKA and psychiatric adjustments using alternatives with a lower metabolic risk. This case emphasizes the necessity for regular metabolic monitoring and the potential need for tailored psychiatric medication strategies to prevent severe side effects, highlighting the unpredictability of antipsychotic-induced metabolic disturbances and advocating for a holistic, patient-centered approach in psychiatric care.

Keywords: Olanzapine; Diabetic Ketoacidosis; Major Depressive Disorder; Psychiatric Medication; Metabolic Disturbances; Case Study; Antipsychotic Side Effects; Patient-Centered Care

1. Introduction

Olanzapine is a prominent second-generation antipsychotic drug valued for its effectiveness in managing severe psychiatric disorders such as schizophrenia and bipolar disorder. Despite its benefits, the medication's association with metabolic disturbances like diabetic ketoacidosis (DKA) is often underappreciated, particularly within the psychiatric community. This article focuses on highlighting this serious yet overlooked complication, advocating for healthcare providers to consider the metabolic consequences of olanzapine in their treatment plans, especially for vulnerable populations.

2. Case presentation

The subject of this case is a 36-year-old married female, a mother of two, who experienced severe diabetic ketoacidosis following the administration of olanzapine. Initially prescribed for psychotic features that emerged during treatment for a major depressive episode, she began olanzapine at a low dose of 2.5 mg daily due to concerns about potential side effects. Her psychotic symptoms, which included auditory hallucinations and persecutory delusions directed at her brother-in-law, had developed while she was receiving 40 mg of paroxetine. Notably, her metabolic parameters, including glucose levels and lipid profiles, were normal at the initiation of olanzapine treatment and remained stable during the first three months.

* Corresponding author: EL FELLAH SARA

3. Clinical findings

The patient's admission to the hospital was prompted by severe symptoms of diabetic ketoacidosis, a stark contrast to her previously stable metabolic state. Clinical examination revealed signs of severe dehydration, such as dry mucous membranes and decreased skin turgor. She reported experiencing excessive thirst and urination, symptoms that had escalated over a short period. Laboratory tests were critical in painting a comprehensive picture of her metabolic derangement. Blood glucose levels were alarmingly high, recorded at over 600 mg/dL. Key diagnostic markers for diabetic ketoacidosis were also present, including a significantly elevated anion gap of 28 mmol/L and the presence of ketones in the urine, indicating severe ketoacidosis. Further testing revealed an abrupt and severe increase in her hemoglobin A1c, which had surged from a well-controlled 6.8 percent to a critical 13.5 percent over the course of four months. This dramatic rise was unusual given her previous stable diabetic control and underscored the acute impact olanzapine had on her glucose metabolism. The results of her lipid profile, which showed marked dyslipidemia, and elevated liver enzymes, suggested a broader metabolic disruption likely exacerbated by the olanzapine therapy. These findings were critical in confirming the diagnosis of olanzapine-induced diabetic ketoacidosis and underscored the severity of her condition, necessitating immediate and aggressive management to mitigate the life-threatening complications of severe hyperglycemia and acidosis.

4. Treatment and outcome

Upon confirming the diagnosis of olanzapine-induced diabetic ketoacidosis, the patient's treatment was promptly initiated with a multidisciplinary approach, focusing on both her acute metabolic derangement and psychiatric condition. The initial step in her medical management involved the discontinuation of olanzapine to eliminate the primary cause of her metabolic instability. This was complemented by intensive medical interventions to address the DKA, including intravenous hydration to correct her dehydration and continuous intravenous insulin infusion to rapidly reduce her blood glucose levels and close the anion gap. Electrolyte imbalances were meticulously monitored and corrected, and her acid-base status was continuously assessed to guide the adjustments in her insulin therapy and fluid management. From a psychiatric perspective, after stabilizing her acute medical condition, aripiprazole was initially chosen as an alternative antipsychotic due to its lower metabolic risk. However, due to severe akathisia at even a low dose of 5 mg, aripiprazole was discontinued. Amisulpride at a dose of 50 mg was then selected for its efficacy in treating psychotic symptoms and lower risk of metabolic effects. The patient tolerated amisulpride well, showing significant improvement in her psychiatric symptoms without additional metabolic disturbances. As her condition stabilized, the dosage of paroxetine, which had been prescribed for a major depressive episode, was reduced from 40 mg to 20 mg after six months of treatment. This adjustment was made in response to her improved depressive symptoms and to minimize potential side effects. The patient maintained a clean profile under amisulpride treatment for eight months. Given her stable psychiatric condition and the absence of side effects, a decision was made to gradually taper off amisulpride. This process was carefully managed to monitor any potential recurrence of symptoms or withdrawal effects. Ultimately, amisulpride was completely discontinued, leaving the patient medication-free in terms of antipsychotic treatment. The outcome following these adjustments was highly positive. The patient's metabolic parameters remained stable, and her psychiatric condition was well-managed without the need for ongoing antipsychotic medication. Her diabetes control also showed continued improvement, with her hemoglobin A1c consistently within target ranges. This case underscores the complex challenges of managing side effects associated with antipsychotic medications, particularly olanzapine's potential to induce severe metabolic disturbances such as diabetic ketoacidosis (DKA). Despite starting at a low dose and showing initially normal metabolic parameters, the patient developed DKA, highlighting the unpredictable nature of antipsychotic side effects and the importance of individualized treatment and vigilant monitoring. The need for personalized approaches in psychiatric care is further emphasized by the patient's experience with aripiprazole, which, despite its favorable metabolic profile, had to be discontinued due to intolerable akathisia. The successful management of her psychiatric symptoms with amisulpride and the eventual discontinuation of this medication illustrate that long-term antipsychotic use is not always necessary for maintaining psychiatric stability, challenging traditional views on the continuous use of these drugs. Additionally, this case reflects the importance of a holistic approach to psychiatric treatment that accounts not only for symptom control but also for the patient's overall physical health and quality of life. Adjustments in the patient's medication regimen, including the reduction of paroxetine and careful management of amisulpride discontinuation, demonstrate the benefits of tailoring treatment to individual needs and conditions.

5. Conclusions

This case of olanzapine-induced diabetic ketoacidosis in a psychiatric patient highlights several critical issues in the management of antipsychotic medications. Firstly, it underscores the potential severe metabolic disturbances

associated with olanzapine, even at low doses and in the context of initially normal metabolic parameters. The development of diabetic ketoacidosis in this patient reflects the unpredictable nature of such side effects and underscores the necessity for vigilant monitoring and personalized treatment strategies in psychiatric care. The patient's journey through the challenges of finding a suitable antipsychotic medication also illuminates the importance of flexibility in psychiatric treatment. The initial adverse reaction to aripiprazole and the successful management with amisulpride, followed by its eventual discontinuation, demonstrate that long-term antipsychotic treatment may not be necessary for all patients to maintain stability. This case thus advocates for a more nuanced approach to psychiatric medication management, where the duration and choice of medication are carefully tailored to individual patient needs and tolerances. Moreover, the successful reduction of paroxetine and careful handling of medication adjustments highlight the benefits of a holistic treatment approach. This strategy not only addresses the psychiatric symptoms but also considers the overall well-being and physical health of the patient, emphasizing the importance of integrating care across disciplines. In conclusion, this case serves as a poignant reminder of the complexities of treating psychiatric patients with comorbid medical conditions. It stresses the importance of a comprehensive, patient-centered approach in psychiatric medication management—one that is adaptive, vigilant, and holistic. The ultimate goal is to ensure that treatment enhances the patient's quality of life while minimizing potential risks and side effects, thereby improving overall patient outcomes in psychiatric care.

Recommendations

Regular metabolic screenings should be mandatory for patients treated with olanzapine, even at low doses. Clinicians should be prepared to alter treatment plans based on the patient's metabolic profile, possibly transitioning to antipsychotics with a lower metabolic risk when significant side effects are observed.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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