

# Acute psychosis following diabetic ketoacidosis in an 11-year-old, management challenges in a resource-limited setting

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## Abstract

Diabetes mellitus (DM) is the most common endocrine disorder in children and type 1 DM is the most common; however increasing incidence of type 2 DM is being reported, especially in western societies. Occurrence of psychiatric disorders has been associated with type 2 DM but is rare in those with type 1 DM; therefore the case of an 11-year-old girl who was treated for diabetic ketoacidosis, but suddenly developed acute psychotic symptoms shortly after regaining consciousness is reported. Atypical antipsychotic medications were avoided in this case for concerns of their risk of causing abnormal glucose metabolism.

**Key words:** Acute psychosis, diabetic ketoacidosis, type 1 diabetes mellitus

## INTRODUCTION

Diabetes mellitus (DM) is the commonest endocrine disorder in children.<sup>[1]</sup> Though type 1 DM is the commonest, increasing incidence of childhood obesity especially in industrialized societies has resulted in an upsurge of type 2 DM.<sup>[2,3]</sup> Type 1 DM classically present with polyuria, polydipsia, polyphagia, and weight loss however its initial presentation may be diabetic ketoacidosis (DKA). There is an established relationship between type 2 DM and psychotic disorders and there is also the risk of DM<sup>[4]</sup> related adverse event from the use of some of the atypical antipsychotic drugs<sup>[5-7]</sup> but the association of type 1 DM, DKA with psychosis is a rare event, therefore the case of an 11-year-old girl is reported.

## CASE REPORT

An 11-year-old recently diagnosed type 1 DM patient who was managed for DKA suddenly developed visual hallucination, irrational talks, aggressive behavior, with confused thought and speech after regaining consciousness from DKA; she had no past or family history of psychiatric disorder, no history of fever or head trauma. The physical examinations were not remarkable except for the poor cohesion of thoughts at that point in time. The electrolyte, urea and creatinine, thyroid function test were essentially normal, and the blood and urine glucose were normal at the time of psychosis. Based on these, the diagnosis of post-DKA psychosis was made. She was placed on chlorpromazine (CPZ) at 1 mg/kg/dose and she improved significantly; she is currently being follow-up and no record of relapse was recorded for the past 6-month.

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### DOI:

10.4103/1858-5000.146583

## DISCUSSION

The exact link between schizophrenia and type 2 DM is not completely known; however possible genetic factors may be contributory. However, the link between type 1 DM and schizophrenia has not been established. Acute psychosis may be associated with metabolic, structural neurologic

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disorders, and febrile illnesses such as malaria and typhoid fever but the exact mechanism is not clear;<sup>[8,9]</sup> our patient had type 1 DM; and why she developed psychosis is not clear, the metabolic changes associated with DKA such as changes in serum osmolality and electrolytes results in changes which could alter the body's homeostasis resulting in fluid shift in the brain which may present with neurologic symptoms; it is a transit event which resolves with treatment of the acute metabolic insult.

However the serum glucose, sodium and potassium were normal at the time of psychosis in the index case, which makes it difficult to completely attribute her symptoms to changes in serum glucose and electrolytes.

Atypical antipsychotic drugs are the cornerstone in the acute management of psychosis however there are concerns of its association with the development of dyslipidemia, hyperglycemia, ketoacidosis and DM;<sup>[10]</sup> this compounded her management because they were avoided in the index case; however CPZ are effective in controlling the positive symptoms in psychosis such as hallucination, aggression, delusion; and the index case responded to treatment. Though, CPZ has limitation with control of negative symptoms such as apathy, more so there is an associated risk of weight gain, but these were not noticed in the index case.<sup>[11]</sup> Despite these limitations, she made remarkable improvement and has remained symptom-free for the past 6-month.

## CONCLUSION

Type 1 DM with DKA may be associated with acute psychosis though the exact mechanism is not known; unlike in type 2 DM, the possibility of these psychiatric symptoms resulting from metabolic derangement arising from DKA cannot be completely ruled out-which is likely to be a transit

event; however long-term follow-up of such category of cases is still needed to exclude the possibility of chronicity.

## REFERENCES

1. Gale EA. The rise of childhood type 1 diabetes in the 20<sup>th</sup> century. *Diabetes* 2002;51:3353-61.
2. D'Adamo E, Caprio S. Type 2 diabetes in youth: Epidemiology and pathophysiology. *Diabetes Care* 2011;34 Suppl 2:S161-5.
3. Haines L, Wan KC, Lynn R, Barrett TG, Shield JP. Rising incidence of type 2 diabetes in children in the U.K. *Diabetes Care* 2007;30:1097-101.
4. Nuevo R, Chatterji S, Fraguas D, Verdes E, Naidoo N, Arango C, *et al.* Increased risk of diabetes mellitus among persons with psychotic symptoms: Results from the WHO World Health Survey. *J Clin Psychiatry* 2011;72:1592-9.
5. Baker RA, Pikalov A, Tran QV, Kremenets T, Arani RB, Doraiswamy PM. Atypical antipsychotic drugs and diabetes mellitus in the US Food and Drug Administration Adverse Event database: A systematic Bayesian signal detection analysis. *Psychopharmacol Bull* 2009;42:11-31.
6. Newcomer JW. Second-generation (atypical) antipsychotics and metabolic effects: A comprehensive literature review. *CNS Drugs* 2005;19 Suppl 1:1-93.
7. Guo JJ, Keck PE Jr, Corey-Lisle PK, Li H, Jiang D, Jang R, *et al.* Risk of diabetes mellitus associated with atypical antipsychotic use among Medicaid patients with bipolar disorder: A nested case-control study. *Pharmacotherapy* 2007;27:27-35.
8. Spelman LM, Walsh PI, Sharifi N, Collins P, Thakore JH. Impaired glucose tolerance in first-episode drug-naïve patients with schizophrenia. *Diabet Med* 2007;24:481-5.
9. Sowunmi A. Psychosis after cerebral malaria in children. *J Natl Med Assoc* 1993;85:695-6.
10. McEvoy JP, Meyer JM, Goff DC, Nasrallah HA, Davis SM, Sullivan L, *et al.* Prevalence of the metabolic syndrome in patients with schizophrenia: Baseline results from the Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE) schizophrenia trial and comparison with national estimates from NHANES III. *Schizophr Res* 2005;80:19-32.
11. Byrne P. Managing the acute psychotic episode. *BMJ* 2007;334:686-92.

**How to cite this article:** Aliyu I. Acute psychosis following diabetic ketoacidosis in an 11-year-old, management challenges in a resource-limited setting. *Sudan Med Monit* 2014;9:91-2.

**Source of Support:** Nil. **Conflict of Interest:** None declared.