



The diagnosis of diabetes ketoacidosis in A Child: A case report

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Abstract

Diabetic ketoacidosis can be the first presentation of diabetes mellitus in a child. If not recognised early, it can lead to recurrences and also well known micro vascular and macro vascular complications of diabetes mellitus. However, the initial presentation of diabetes mellitus may be insidious especially in a young child.

This case report will look at a 14-years-old girl who presented with an history of vomiting and abdominal pain was finally diagnosed as diabetic ketoacidosis secondary to uncontrolled diabetes mellitus.

Keywords: diabetes mellitus, children, diabetic ketoacidosis, abdominal pain; insulin

Introduction

The prevalence of diabetes mellitus is increasing worldwide. This include for both type 1 and type 2 diabetes mellitus (DM). The importance of treating both type subtypes of DM is undeniable due to its' inherent risk of both acute and chronic complications. Diabetic ketoacidosis (DKA) is an acute and life-threatening complication that is more common in patients with type 1 DM but can occur in those with Type 2 DM^[1]. It is associated with a mortality rate of up to 2%, mainly in developing countries^[1]. Therefore, early diagnosis and aggressive management will be key to reduce this rather alarming mortality rate of DKA.

This case report will look at a 14-years-old girl who presented with a history of vomiting and abdominal pain was finally diagnosed as diabetic ketoacidosis secondary to uncontrolled diabetes mellitus.

Case report

A 14 years-old girl complained of generalised abdominal pain and vomiting for one week. The vomitus mainly contained food particle with absence of blood. Initially her parents, self-medicated their daughter with anti-emetic and antacids. However, as her symptoms did not improve, she was brought to the emergency department. There is absence of fever or any urinary tract symptoms. Physical examination revealed normal vital signs including a blood pressure of 110/72 mmHg, pulse rate of 82 betas per minute, temperature of 36.8°C and respiratory rate of 16 breaths per minutes. Abdominal examination reveals mildly diffuse abdominal tenderness with absence of guarding and rebound tenderness. Full blood count, urine microscopy, random blood and renal profile done were done at the emergency department. Urine microscopy and random blood glucose showed the presence of 4+ ketones and glucose and a random blood glucose of 18.8 mmol/L. The full blood count and renal profile were normal. A diagnosis of DKA was made.

The patient was admitted and started on aggressive treatment

based on the DKA management algorithm. She was discharged well after 6 days with basal bolus insulin together with dietary and exercise advise and was given appointment in two weeks for review.

Discussion

Common symptoms of DKA includes nausea, vomiting, diffuse abdominal pain, anorexia, lethargy along with classical symptoms of type 2 DM such as polydipsia, polyuria, rapid weight loss and presence of concurrent infection (usually pneumonia or urinary tract infection)^[1]. Diagnostic criteria remains the same for both adults and children with type 1 and type DM which is either presence of classical symptoms of diabetes or manifestation of acute complication of DM with a random blood glucose of ≥ 11.1 mmol/fasting plasma glucose ≥ 7 mmol/L/ HBAIC $\geq 6.5\%$ or deranged oral glucose test. Alternatively, diagnosis of DM can be made by two abnormal biochemical glucose abnormalities in absence of clinical manifestations^[2, 3].

In addition, biochemical features that can support the diagnosis of type 1 DM include presence of either low or undetectable levels of C-peptide and/or diabetes associated autoantibodies^[2]. Diagnosis must not be delayed either way to avoid the above complications secondary to chronic hyperglycaemia.

American Diabetic Association (ADA) has set a target of HBAIC $< 7\%$ in adults and < 7.5 in children and adolescents, with the higher targets in the later special group to balance the risk of hyperglycaemia and hypoglycaemia.⁴ Results from both the landmark studies of the Diabetes Control and Complications Trial (DCCT) and the Epidemiology of Diabetes Interventions and Complications (EDIC) follow-up study of the DCCT cohort have indicated the need to treat patients with type 1 DM as aggressively as possible to achieve target HBAIC and the avoid/delays the micro vascular and macro vascular

complications [4].

The diagnosis of Type 1 DM usually entails the need to start insulin therapy due to absence or near absence of functioning insulin in the body [1, 4]. Compliance to medications is important just like in other chronic diseases such as hyperlipidaemia and hypertension [5].

In the acute setting of DKA crisis, aggressive fluid and electrolytes management as well the commencement of intravenous insulin and antibiotics in the presence of concurrent infection will ensure a better prognosis and recovery for the patient. Patients with type 1 DM usually will need life-long insulin regimen as well as regular follow-ups to ensure compliance to treatment plan and to monitor for development of complications associated with DM. DKA may lead to falls may lead to fractures especially in those with growing bones (6-7).

Conclusion

In conclusion, this was an interesting case of a child which presented with DKA as an initial presentation of type 1 DM.

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