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Attention to Diabetes in Children! Diabetic Ketoacidosis: A Case Report

Case Report

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Abstract

Diabetic ketoacidosis (DKA) continues to be a common presentation of both Type 1 and Type 2 diabetes in children and adolescents. Early recognition and treatment in patients with new-onset diabetes are essential to the prevention of this potentially life-threatening complication of diabetes. When a sick infant or toddler presents to their primary care physician, Type 1 diabetes is generally not high on the list of possible diagnoses, given the relatively low incidence of the disease in this age group.

In this case report, a child with a diabetic ketoacidosis who apply to the family medicine centre that is initially undiagnosed for Type 1 diabetes will be discussed.

The family physicians should be remain alert to the possibility of diabetes being the underlying cause of a child's illness, the diagnosis may be missed.

Keywords: Diabetic Ketoacidosis; Children; Primary Care.

Introduction

Family physicians are the first point of contact with the health care system and deal with undifferentiated patients. Problems are presented to primary care doctors different than they are presented to secondary care. Because of absence of preliminary election, the prevalence and incidence of diseases are different from the hospital environment and severe diseases are seemed more rarely than hospital [1].

Type 1 Diabetes is a result of autoimmune destruction of pancreatic beta cells and in the world incidence of 0- 14 age group varies between 0.1 and 57.6/ 100000 according to geographical areas [2]. Epidemiological data show that some viral diseases occurrence increase before diagnosis of Type I Diabetes. In childhood, infections are the first reasons of diabetic ketoacidosis in patients both initial diagnosis of diabetes and diabetic patients who are already under treatment [3].

When the infections are severe, diabetic ketoacidosis can occur in type I diabetes patients. Despite the fact that the mechanism of these effects are unknown, there are predictions about increased releasement of contra-regulatory hormones as a response of stress and cytokine release in acute infections. Cytokines can be cause of releasement of contra-regulatory hormones and they can effect carbohydrate metabolism [3-6].

Diabetic ketoacidosis is the most common cause of diabetes-related death in childhood. Without insulin therapy, the mortality rate is 100%, but current mortality rates are around 2-5% [9-11]. Diabetic ketoacidosis (DKA) is biochemically defined as a venous pH <7.3 or serum bicarbonate concentration <15 mmol/L, serum glucose concentration >200 mg/dL (11 mmol/L) together with ketonemia, glucosuria, and ketonuria [12, 13].

In this case report, a child with a diabetic ketoacidosis that is

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initially undiagnosed will be discussed.

Case Presentation

8 years-old girl, who had any complaints before application, had complaints of chills in hands and feet, paleness on face and fatigue two days ago. The patient vomited and with complaints of frequent breathing applied to primary health care centre. The family medicine doctor she is registered was off duty and for that reason she is examined by another doctor in health centre. She had diagnosis of otitis and Amoxicillin-clavulonic acid 600 mg suspension and ibuprofen suspension were prescribed. She was called for control visit the day after diagnosis. When she arrived home, her complaints of vomiting and breathing were increased. The patient's mother had called a paediatric specialised doctor, which is a family friend, and the doctor said her to visit emergency service for a chest x-ray. The patient applied to emergency service and had an chest x-ray, it was interpreted normal. The doctors of emergency service said that the reason of complaints may be psychological and discharged her to go home. When the patient arrived home, her breathing difficulties were increased and pupils were dilated and applied to emergency service again. When her blood sugar level was measured, it was 382 mg/dl. Beside Kussmall respiration, there was not additional symptom in her physical examination. In her additional blood tests, blood glucose level: 465 mg/dl, Na: 129 mmol/L, white blood cell count: 36200, lymphocytes count 4200/L, monocytes count 1200/L, neutrophil count 30700/L, haematocrit 46.5, platelet count 456000/L, Neutrophil 84.9%, Lymphocytes 11.6%. In urine analysis, urine ketone: >15 mmol/L, urine glucose: >56 mmol/L, protein: 0.5 g/L. Venous blood gases: pH: 6.838, pCO2: 24 mmHg, pO2: 31.7 mmHg, K: 3.4 mmol/L, Lac: 4.2 mmol/L, BE-B: -26.8 mmol/L, HCO3: 5 mmol/L, O_2 sat: 55.3 %, AaDO2: 90.1mmHg. She was diagnosed diabetic ketoacidosis and treatment started.

Discussion

Major signs of Type I diabetes are dryness of mouth, frequent feeling thirsty, frequent and many urination, fatigue, weakness, frequent feeling hungry, losing weight without being on diet, blurred vision and numbness and tingling especially in hands and feet [3]. Signs move fast, for his reason some patients have no severe complaints before diagnosis. Beside this, some patients apply with these symptoms after occurrence of diabetic ketoacidosis: Frequent and deep breathing, dryness of mouth and skin, flushing on face, odour of breathe with rotten fruit, nausea and vomiting, frequent urination, abdominal and stomach pain [5-8]. When a patient applies to health centre with these symptoms, Type 1 diabetes and diabetic ketoacidosis don't come back to minds [10].

Family medicine doctors are the first contact points in health system and deal with undifferentiated patients. The patients usually apply to primary healthcare centre when the symptoms first appear and it is difficult to diagnose. Mean of that application is that important decisions about patients should be made with limited information and physical examination and laboratory tests are not determined clearly. Sometimes, despite the fact that symptoms of certain diseases are known well, it is not frequently certain for non-specific and early term symptoms [11, 12]. Under this circumstances, management of risk is the key of family medicine discipline. The difference of prevalence and incidence of diseases between primary and secondary healthcare centres and rarely seem of severe diseases in primary healthcare centre need a specific decision make process with usage of community, lived within, information. The predictions of a symptom or a diagnostic test differ in family medicine rather than hospital environment [1]. For these reasons, type I diabetes and diabetic ketoacidosis incidences and prevalence are rare, diagnosis of these diseases are difficult [14]. In order to skip over less diagnosis, when suspected it is essential to measure blood glucose level with glucometer [5].

Conclusion

Infants and toddlers comprise a small minority of individuals with type 1 diabetes. However, epidemiological data provide evidence of a trend towards diagnosis at a younger age. These very young children pose significant challenges to both the health care professionals involved in their care as well as to their families. At diagnosis, younger children often do not present with classical symptoms of diabetes [15]. These patient apply to their family physician different kind of symptoms Unless family physicians remain alert to the possibility of diabetes being the underlying cause of a child's illness, the diagnosis may be missed.

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