## Indian Journal of Nutrition



Volume 3, Issue 2 - 2016 © Usha Kiran S. 2016 www.opensciencepublications.com

# Type 1 diabetes and management of its emergencies in hospital: A Case Report

### **Case Report**

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Article Information: Submission: 26/07/2016; Accepted: 06/09/2016; Published: 10/09/2016

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Keywords: Type 1 diabetes; Diabetic ketoacidosis; Self-management; Poor compliance

#### Introduction

Type 1 diabetes is a disorder characterized by hyperglycemia either due to insufficient or ineffective insulin availability. There are increasing incidences of type 1 diabetes seen amongst children with three new cases out of every 100,000 children of 0-14 years in India [1]. Rise in serious complications of type 1 diabetes is frequently presented in hospitals, this is due to low education and lack of training the patients to be self reliant in not just understanding but also managing the condition and preventing its complications. Diabetic ketoacidosis (DKA) is one such common complication seen in type 1 pediatric emergencies this is due to Presence of high levels of ketone bodies in the blood and urine due to lack of insulin which helps in utilizing glucose for energy needed for bodily functions because of either inadequate dosage, missed out on taking insulin injection, emotional stress, trauma or infections with improper management of insulin dosage. DKA is an acute, major life-threatening complication and the most common threat in children requiring immediate medical treatment with education of the necessary skills needed for selfmanagement of the condition regardless of the severity [2]. We present one such interesting case of a girl admitted in the emergency unit of the hospital with diabetic ketoacidosis because of poor management and overlooked high blood glucose levels hence throwing light on the need for more training on managing the condition.

#### **Case Presentation**

A 15 years old girl with type 1 diabetes since three years was taken to the emergency unit of the hospital presented typical symptoms of ketoacidosis on admission such as dehydration, weakness, and abdominal pain, nausea with 2 episodes of vomiting, drowsiness fever and breathlessness. The laboratory results revealed hyperglycemia 312mg/dl and urine ketones 4+ confirming the diagnosis of diabetic ketoacidosis. She was immediately put on treatment by the doctor after screening patient's health status and clinical severity of the condition. The dietician performed a detailed assessment of dietary intake by taking 24-hour recall studying her food pattern, daily schedule with school timings, and amount of carbohydrate per meal with insulin regime followed by the patient to find out the factors that contributed to the cause of diabetic ketoacidosis. The investigations revealed improper monitoring of blood glucose levels because of the lack of knowledge and proper training to be self-reliant in management, skipping of insulin injection prior to ketoacidosis being the major cause that must have impaired glucose utilization to energy due to the lack of insulin leading to hyperglycemia state, therefore fat is used as a primary source of energy by producing ketone bodies from fatty acid oxidation, excess of ketone bodies enter the blood brain barrier causing unconsciousness and coma hence the dietician emphasized in training the child and the family, drawing their attention in learning the necessary skills for maintaining blood glucose levels and prevent relapse of ketoacidosis [1,3]. Initiation of intravenous fluid and electrolyte replacement with insulin therapy with continues monitoring for blood glucose and ruling out other

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possible complications were the immediate medical treatment and by restoring fluid, glucose uptake in the periphery increases improving glomerular filtration rate and reversing acidosis, insulin administration ceases ketogenesis by reversing proteolysis and lipolysis, stimulating glucose uptake by the cell which is further used as energy, thereby normalizing blood glucose concentration and replacing electrolyte losses and reducing the progression of the complication [4]. The patient showed quick recovery after initiating the treatment and thus to eliminate all the factors of relapse of DKA a systemic team approach was carried out by the entire team including an Endocrinologist, RD dietician and nursing.

Patient in recovery was advised healthy balanced diet as per recommended dietary allowance for Indian adolescent with 2330 calories, 51gms of proteins, 40gms of visible fat and 55% of simplecomplex carbohydrate distributed in all the meals as per insulin dose. A detailed counseling was given to the child and parents by the dietician, educating the knowledge in understanding early signs and symptoms of DKA and taking immediate action in verification and initial home treatment also the patient was taught correction factor of insulin dose when hyperglycemia or hypoglycemia with the skills of carbohydrate counting and its choices. The Goal for this patient is to be self- reliant in managing normal blood glucose level with the skills of carbohydrate counting, insulin dose with correction factor and activity pattern was achieved after a one month follow up and now the patient is independently managed type 1 diabetes such approach must be practiced in order to reduce the type 1 emergencies in hospital.

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