

The survival story of a diabetic ketoacidosis patient with blood sugar levels of 1985 mg/dL



Submitted: 30-04-2017

Revised: 09-05-2017

Published: 01-07-2017

Dear Sir,

As you are aware, diabetic ketoacidosis (DKA) and hyperglycemic hyperosmolar state (HHS) are two of the acute and critical conditions faced by patients with diabetes mellitus (DM). Previously, DKA was considered as a hallmark of type 1 DM, while HHS of type 2 DM. But now, DKA is also seen among type 2 DM patients.

DKA is characterised by hyperglycemia, ketosis and metabolic acidosis. It is the result of an absolute or relative deficiency of insulin with excess of counter regulatory hormones like glucagon, catecholamines, growth hormone and cortisol. The increased release of fatty acid from adipocytes leads to ketosis. The event is precipitated by inadequate insulin administration, infections (pneumonia, urinary infection, gastroenteritis), infarction (cerebral, mesenteric, coronary, peripheral) or drugs (cocaine). These patients present with nausea, vomiting, thirst, polyuria and dyspnoea. Clinically, they are dehydrated, tachypnoeic and may be comatose. Tachycardia, hypotension and abdominal pain are other findings. Investigation reports show elevated blood sugar levels (250 – 600 mg/dL), strong presence of plasma and urinary ketones and low arterial pH (6.8 – 7.3).¹

This is a case of an 82 year old lady who is a known case of DM (on insulin therapy), hypertension (on amlodipine 5 mg once daily) and dyslipidemia (on atorvastatin 20 mg at night). She has been on these medications for the past 15 years. She had history of fever and burning micturition since 2 days; and during this period she skipped her insulin. On presentation, she was unconscious. Her heart rate was 120/minute, blood pressure 90/60 mmHg, temperature 99°F, respiratory rate 32/minute with saturation 96% (room air). She was dehydrated. Her systemic examinations were normal. Her laboratory investigations showed leucocytosis (13000 cells/cmm) with neutrophilia (92%), deranged renal functions (urea 62 mg/dL and creatinine 1.8 mg/dL) and blood sugar levels 1985 mg/dL. Her urine ketones were positive (4+) and urine microscopy showed plenty of pus cells. Her arterial blood gas analysis showed metabolic acidosis with pH 6.9, pCO₂ 15 mmHg, HCO₃ 10 mEq/L.

Her electrolytes, liver functions, chest Xray and ECG were normal. Her CT brain showed age related atrophic changes. She was managed with intravenous fluids and insulin infusion (according DKA protocol). Injection ceftriaxone was administered for urinary infection. By day 3 of admission, patient became conscious and well oriented. Her vitals stabilized. Blood sugar levels were normalized to 100 to 150 mg/dL and fixed doses of insulin were started. Her urine culture grew Klebsiella and antibiotics were changed to Piperacillin plus Tazobactam (according to culture and sensitivity reports). She was discharged in stable condition on day 10 of admission.

As mentioned earlier, DKA is an acute life threatening complication of DM. According to Harrison's Principles of Internal Medicine (19th edition), the blood sugar range in DKA is 250-600 mg/dL and HHS 600-1200 mg/dL.¹ The highest recorded blood sugar level in the world is 2,656 mg/dL. This value belongs to Michael Patrick Buonocore, a type 1 DM patient, when he was admitted to the Pocono Emergency Room in East Stroudsburg, Pennsylvania, USA, on 23 March 2008. This value has enabled him to enter the Guinness Book of World Records. Our patient presented with hyperglycemia, ketosis and metabolic acidosis, thus satisfying the diagnosis of DKA; with missed insulin and urinary infection being the precipitating factors. Her blood sugar level at the time of admission was 1985 mg/dL. A medical literature search does not report such an elevated blood sugar levels in DKA patients with type 2 DM. This case, therefore, highlights the recording of such a high sugar levels in an elderly patient with type 2 DM and her miraculous survival from DKA.

Key words: Diabetic ketoacidosis, Diabetes mellitus, Urinary tract infection

Access this article online**Website:**<http://nepjol.info/index.php/AJMS>**DOI:** 10.3126/ajms.v8i4.17251**E-ISSN:** 2091-0576**P-ISSN:** 2467-9100

**Manoj Gopalakrishnan¹,
Robin George Manappallil², Dipu Ramdas²,
JishnuJayaraj³**

*¹Senior Consultant-Physician, ²Consultant-Physician, ³Resident,
Department of Internal Medicine, Baby Memorial Hospital, Calicut,
Kerala, India*


Address for correspondence:
Dr. Robin George Manappallil,
Department of Internal Medicine,

Baby Memorial Hospital,
Calicut, Kerala 673004, India
E-mail: drrobingeorgempl@gmail.com,
Phone: 0091-8547753396

REFERENCE

1. Powers AC. Diabetes Mellitus: Management and Therapies. In: Kasper, Fauci, Hauser, Longo, Jameson, Loscalzo eds. Harrison's Principles of Internal Medicine. 19th ed. McGraw Hill education 2008. pp. 2417-2420.

Authors Contribution:

MG- Concept and design of case report and treating Physician; **RGM-** Reviewed the literature, manuscript preparation and treating Physician;
DK- Critical revision of manuscript and treating Physician; **JJ-** Resident in-charge
Dr. Robin George Manappallil -  <http://orcid.org/0000-0003-3973-6800>

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