Type 1 or Type 2 Diabetes: Where Does Flatbush Diabetes Fit In?

Quincy Enyioma John, MD, PGY-1 and Syed Raza Ali Shah, MD
Northwest Washington Family Medicine Residency

Introduction

Ketosis-Prone Diabetes is a rare manifestation that presents itself as ketoacidosis in a diabetic patient that does not require long-term insulin therapy as type 1 diabetics do. This has led to new ways to classify different types and subgroups of diabetes to accurately predict a patient's need for insulin.

Category	Characteristics
Aß system	Presence of autoantibodies and beta cell function
BMI System	Lean (<28) versus obese (≥28)
ADA system	Idiopathic type 1 or type 1b
Modified ADA System	Insulin dependent versus non-insulin dependent

Table 1 – Classification of Ketosis-Prone Diabetes

Characteristics of Aß Subgroups

	A+ß+	A-ß+	A+ß-	A-ß-	P-value
Age at Diabetes Diagnosis	42 ± 12	39 ± 12	25 ± 17	26 ± 12	<0.0001
Years with Diagnosis	0.9 ± 3.0	3.0 ± 4.8	9.1 ± 10.4	9.8 ± 8.7	<0.0001
New Onset Diabetes	91%	51%	17%	9%	<0.0001
Recurrent DKA Episodes	9%	2%	39%	30%	<0.0001
BMI	30.6 ± 7.6	29.4 ±8.3	24.5 ± 3.9	23.0 ± 2.8	0.0003
Insulin Discontinued by 6 Months	45%	51%	0%	0%	<0.0001

Table 2 – From Balasubramanyam, Ashok et al. "Syndromes of ketosis-prone diabetes mellitus." *Endocrine reviews* vol. 29,3 (2008): 292-302. Detailing selected patient characteristics within a multiethnic study population of the four Aß Subgroups.

Case Presentation

66 year old male with a past medical history of newly diagnosed type 2 diabetes mellitus, alcohol abuse, prior subdural hematoma, and seizure disorder who presented after a syncopal episode associated with bowel and bladder incontinence and subsequent confusion. The patient noted that he fainted the previous night and hit his head but could not get up. Paramedics noted that he had an end-tidal CO2 of 29 and blood glucose was approximately 500. On initial assessment, he presented with hypotension, hypothermia, hypobicarbonatemia, and an anion gap of 32 so treatment for diabetic ketoacidosis was initiated. After insulin and IV fluid resuscitation, the patient's anion gap decreased. This was the patient's second episode of diabetic ketoacidosis since being diagnosed just five months prior. His C-peptide was 0.1, which showed essentially absent insulin secretion, but his GAD and anti-pancreatic islet cell antibodies were negative. A diagnosis of ketosis prone diabetes was made and he was categorized in the A-ß+ versus A-ß- subgroup. He did not require any insulin and was discharged on pioglitazone with Endocrinology follow up.

Discussion

The etiology of Ketosis-Prone Diabetes is still being investigated as oxidative stress, viral infection, and genetic variations may play a role. Ketosis-Prone Diabetes patients are best classified using the Aß system where A denotes the presence of autoantibodies and ß represents the presence of β-cell function. In order from most to least common, the subgroups are A-ß+, A-ß-, A+ß-, and A+ß+. Those who are ß- usually require long term insulin therapy after their first DKA episode while most ß+ patients do not need ongoing insulin therapy.

Conclusion

Emergency physicians, hospitalists, and primary care providers should have a high clinical suspicion for Ketosis-Prone Diabetes to ensure timely diabetic medication adjustments and to decrease the incidence of additional diabetic ketoacidosis episodes.

References

Balasubramanyam, Ashok et al. "Syndromes of ketosis-prone diabetes mellitus." *Endocrine reviews* vol. 29,3 (2008): 292-302.

Umpierrez, Guillermo E. "Ketosis-prone type 2 diabetes: time to revise the classification of diabetes." *Diabetes care* vol. 29,12 (2006): 2755-7.

Umpierrez, Guillermo E et al. "Narrative review: ketosis-prone type 2 diabetes mellitus." *Annals of internal medicine* vol. 144,5 (2006): 350-7.