

## My HbA1C is giving me Palpitations

Category: Medicine & Medical Specialties, Poster Presentation

Disclosure: The authors did not report any financial relationships or conflicts of interest

[Supplemental Video](#)

Presenting Author: Amaraoma Ugoji, BS, Medical Student, Internal Medicine, Tulane University School of Medicine, New Orleans, Louisiana

Coauthors: Phoebe Jensen, Chief Resident, Internal Medicine, Tulane University School of Medicine

### Introduction:

Tachycardia as a presenting symptom is nonspecific and could be due to a variety of disease processes. While cardiovascular causes are often suspected first in the etiology of tachycardia, endocrine related causes should also be considered. This case is about a patient who presented with tachycardia secondary to undiagnosed Type 2 Diabetes Mellitus.

### Case presentation:

A 41-year-old woman presented with 3 days of progressive dyspnea on exertion associated with chest pain and palpitations. Her history was significant for hypertension treated with hydrochlorothiazide and persistent low-level tachycardia at her PCP's office for the past 3 weeks. On presentation her vitals were BP: 104/66, HR: 160, RR: 24, and SpO2 100% on room air. Cardiovascular exam revealed tachycardia with no murmurs, rubs or gallops. Pulmonary exam was normal. Triage EKG demonstrated sinus tachycardia with non-specific T wave abnormalities. Initial efforts focused on treating her tachycardia. She was given 6mg IV adenosine three times without any change in heart rate. Laboratory evaluation then demonstrated a glucose of 600mg/dL, a lactic acid of 4.0mmol/L, and a normal TSH level. Urinalysis showed glucose  $\geq$ 500mg/dL and blood 0.20 mg/dL. Echocardiogram showed no abnormalities. Her tachycardia, hyperglycemia and lactic acidosis resolved following fluid resuscitation. The next morning her hemoglobin A1C returned as 10.1%.

### Final Diagnosis:

The patient had hyperglycemia induced osmotic diuresis. Excess glucose in the blood is filtered by the kidneys and accumulates in the renal tubules. The increased renal concentration of glucose facilitates an increased loss of volume via osmotic diuresis, usually resulting in polyuria and compensatory polydipsia. This increase in frequency might have been missed by the patient because she was already on the diuretic hydrochlorothiazide to treat her hypertension. Her hyperglycemia in combination with the use of a diuretic led to severe volume depletion and compensatory tachycardia. It is important for hospitalists to consider a broad differential for tachycardia and lactic acidosis and recognize compensatory tachycardia and volume depletion as an uncommon initial presentation of Type 2 Diabetes Mellitus.

### Outcome:

The patient was educated on diabetes and discharged home with a prescription for metformin, referral for outpatient diabetes education, and close PCP follow up.

### Learning Objectives

1. Recognize an uncommon initial presentation of Type 2 Diabetes Mellitus
2. Explain the pathophysiology of hyperglycemic osmotic diuresis