

Case Report

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Hypoglycemic Episode Masquerading Like Stroke: A Case Report in a Clinical Setting

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ABSTRACT

Hypoglycemia is a major cause of neurological symptoms that can become frequent in diabetic patients. Hypoglycemia usually manifests with behavioral changes, confusion, and loss of consciousness. We report a case of a 75-year-old male who developed clinical features suggestive of stroke, which improved with dextrose infusion. The presentation overlaps with cerebrovascular accident and upon onset of symptoms, immediate treatment is deemed crucial. From a primary care provider standpoint, initial patient education on medication and consistent glucose monitoring is key to long-term management prevention of such hypoglycemic episodes. The presentations also highlight the importance of hypoglycemic awareness in diabetic patients.

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Received: July 13, 2022; **Accepted:** July 22, 2022; **Published:** July 26, 2022

Introduction

Hypoglycemia is defined as blood glucose levels less than or equal to 70 mg/dL and a level less than 54 mg/dL indicating serious and clinically important biochemical hypoglycemia [1]. It is commonly seen in diabetic patients, specifically with risk factors such as older age, longer duration of diabetes, inconsistent mealtimes, and antidiabetic medication use [1,2]. Hypoglycemia typically occurs at glucose levels less than 65 mg/dL, yet this value can vary depending on the individual [1]. The presentation includes tremors, palpitations, sweating, dizziness, weakness, delirium, confusion, and severely low levels of plasma glucose, seizure, and coma. Episodes are commonly detected upon measurement of serum glucose with clinical presentation and usually reversed with increased glucose levels. In a rare event, neuroglycopenic symptoms can include ataxia and if prolonged, irreversible deficits [3].

Case Report

A 75-year-old male was brought to the emergency room (ER) by emergency medical services (EMS) due to stroke-like symptoms. The patient has a medical history of primary hypertension, type 2 diabetes mellitus, NSTEMI, and open angle glaucoma. Per the emergency medical services report, the patient was combative and confused along with showing weakness in his left extremities during the initial evaluation. EMS blood glucose reading was 39 mg/dL so the patient was given 50% dextrose with blood glucose increasing to 102 mg/dL. Upon arrival to the ER, the patient was conscious, alert, and oriented. Vital signs were within normal limits. Physical exam was normal with no residual focal neurological deficits or weakness. Significant laboratory values taken at the ER included BUN levels elevated at 31 mg/dL and glucose; after 50% dextrose was administered, BUN levels increased to 338 mg/

dL. All other laboratory values were within the reference range. Chest X-Ray performed showed no focal consolidation or any cardiopulmonary changes present. The electrocardiogram showed normal sinus rhythm and no ST-segment elevation. The patient symptomatically improved with no focal neurological deficits. The patient was advised to start taking long-acting insulin and have multiple small meals throughout the day.

Before this incident, the patient had not been eating his regular meals and typically was taking 10-12 units of Humalog thrice daily. However, that day he had taken at least 20 units with each session. The patient exhibited grogginess per a family member's report and his last glucose reading at home was 45 mg/dL. The patient's most recent HbA1c level measured one month before this event was 8.8%. The patient was scheduled to follow up with his primary care physician within a week of discharge from the ER. During the follow-up visit, his management plan was discussed and the patient was asked to reiterate the details to clarify any confusion. The physician ensured the patient understood the risks and benefits of medication compliance, as well as monitoring mealtimes and following the plan to prevent further hypoglycemic episodes.

Discussion

The behavioral and neurological changes caused by hypoglycemia can lead to detrimental and irreversible side effects. A review of the literature indicates non-ischemic causes account for 13% of the cases with the stroke-like deficit [6]. In a separate study, hypoglycemia duration greater than depth was related to clinical outcome with prolonged hypoglycemia resulting in poor outcome [7]. At present, the pathophysiology behind the hypoglycemia-induced hemiparesis is unclear [8]. There is a predilection of

right-sided symptoms and correlation with transient abnormal radiographic findings within the internal capsule and splenium of the corpus callosum.

It is essential that diabetic patients, especially on antidiabetic medication, be informed of the presentation, risks, and treatment of hypoglycemia [2]. Antidiabetic medication, mainly sulfonylureas, poses a great risk of glucose fluctuations leading to a rapid decline in sugar levels. Missing meals or erroneous eating habits contribute to the risk. The incorporation of a Continuous Glucose Monitor (CGM) in patients who present with multiple hypoglycemic episodes reduces its recurrence [4,5]. This technology can improve the patient's quality of life and lower the chances of irreversible neuroglycopenic changes.

A combination of patient education and sensor technology decreases detection time between symptoms and treatment [5]. Caution must be practiced when attributing neurological deficits to hypoglycemia and disregarding a cerebrovascular event which is significantly higher in prevalence in the patients with diabetes mellitus.

Conclusion

A variety of risk factors are crucial in understanding the cause of lowered glycemia, yet it is important to focus on the immediate treatment of any symptoms. Instability stems from various causes, specifically unmanaged diet and medication noncompliance. This presentation mimics that of neurological ischemia and can go undetected if there is no prior patient or provider education on immediate blood glucose testing in diabetic patients with stroke-like symptoms. However, caution should be given regarding cerebrovascular events as it is a higher prevalence in patients with diabetes mellitus.

The implementation of continuous glucose monitoring assists in early detection and warning of such levels. Prompt correction of blood glucose levels may resolve such side effects and prevent irreversible damage. Primary care physicians should be responsible for providing education regarding the management of hypoglycemic events to prevent neurological symptoms, as well as information regarding preventive sensor technology.

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