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Case Report

Alcohol-induced hemiplegia hypoglycemia in end stage renal disease patient: a case report

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ABSTRACT

Hypoglycemia is one of the problems that often makes patients come to the emergency department. Generally, patients come with complaints of weakness, shaking, cold sweats, decreased consciousness. Hemiplegia is a rare clinical presentation in hypoglycemic patients. A case 44-year-old male comes to the emergency department with symptoms of weakness in the right half of the body and slurred speech noticed when he wakes up. History of drinking alcohol 1 day before. Based on history and physical examination, the patient is suspected of having stroke. Laboratory examination revealed that the patient had severe hypoglycemia. Administration of 50 ml of D40 fluid resulted in significant improvement in symptoms, and within 3 hours the neurological deficit disappeared. The head CT scan results were within normal limits. This case described hemiplegia which is a rare symptom of hypoglycemia, so that blood sugar checks are important in patients with suspected stroke.

Keywords: Hypoglycemia, Hemiplegia, Alcohol, Stroke

INTRODUCTION

Hypoglycemia was defined as blood sugar level <70 mg/dl with or without symptoms.[1] This condition often occurs in diabetic patients with medication, but can also occur for other causes such as in patients with liver disease, malnutrition, malignancy, alcohol consumption, kidney disease, and others.[2] Signs and symptoms that appear can vary widely and are influenced by the degree of hypoglycemia. Neurogenic signs and symptoms such as shaking, sweating, tachycardia, and hunger will usually appear first and then followed by neuroglycopenic signs and symptoms such as behavioral changes, confusion, weakness, seizures, hemiparesis, and decreased consciousness and even death.[3,4]

Weakness of half of the body in cases of symptomatic hypoglycemia can be misinterpreted as a stroke, so early diagnosis is very important because the management of hypoglycemia and stroke is different.[5,6] Checking blood sugar is one of the essential actions that must be done, because in the case of hypoglycemia, blood sugar correction with intravenous glucose administration will give a good response. In this case report, we described a hypoglycemic patient with a clinical presentation of weakness in the right half of the body (hypoglycemia induced hemiplegia) which is a rare clinical presentation.

CASE REPORT

A 50-year-old man comes to the emergency room with complaints of weakness in the right half of his body and a squeaky voice when he wakes up about 2 hours ago. The patient suddenly fell while getting out of bed in the middle of the night and could not move the right extremity at all. He looks panicked and cannot speak clearly. He has a history of uncontrolled hypertension, smoking cigarette 1 pack per day, and also known to drink alcohol 1 day ago.

Previous history of heart, liver, and kidney disease was denied. On examination the patient was slightly confused with Glassgow coma scale GCS E4M6V4, pulse 105 times/minute, blood pressure 150/90 mmHg, breathing 20 times/minute, body temperature 36.3°C. On neurological examination, pupillary reflex (+) and isocor 3 mm/3 mm, right hemiplegia, paresis of right cranial nerve VII and XII with Upper motor neuron (UMN) type paresis, and decreased physiological reflexes. Blood glucose examination was performed with the result 19 mg/dl. The patient was then given 50 ml of 40% dextrose solution followed by 10% dextrose as maintenance fluid. His condition began to improve. CT scan of the head was done because clinically the patient has not improved completely, so the diagnosis of stroke could not be ruled out. No intracranial hemorrhage or infarction was found. Laboratory results stated that the patient also had end stage renal disease (CKD stage V) with glomerular filtration rate 9 ml/min/1.73 m^2 and anemia with hemoglobin 6.5 g/dl. Blood glucose 30 min after correction is 130 mg/dl. The patient was then observed in the ward for monitoring of neurological symptoms and monitoring of blood sugar. The patient was also given blood transfusions and planned for regular hemodialysis two times a week. The neurologic deficit disappeared completely within 3 hours post correction. The patient was discharged within 3 days with no residual neurologic deficit.

DISCUSSION

This case of hemiparesis induced hypoglycemia occurred in a newly diagnosed patient with chronic kidney disease (CKD) stage V who had a history of drinking alcohol 1 day earlier. These two things are a combination cause of hypoglycemia in this patient. Alcohol causes the process of gluconeogenesis not to run optimally because alcohol metabolism that takes place in the liver causes an increase in the concentration of Nicotinamide adenine dinucleotide plus hydrogen (NADH) which inhibits regulatory enzymes in the process of gluconeogenesis. Disruption of this process causes the physiological system of maintaining blood sugar under certain conditions such as fasting and low intake to be disrupted, causing hypoglycemia.[7,8] Hypoglycemia is also frequently encountered in patients with chronic kidney disease. CKD causes decreased insulin degradation and clearance, decreased renal gluconeogenesis ability, and poor nutrition leading to decreased glycogen storage.[9]

Hypoglycemia can cause various symptoms depending on the duration and severity of hypoglycemia. Initial symptoms include shaking, restlessness, tachycardia, sweating, and hunger, usually occurring at blood sugar <70 mg/dl. Decreased blood sugar <50 mg/dl or prolonged hypoglycemia will cause deprivation of brain blood sugar which causes neuroglycopenic symptoms such as headaches, dizziness, seizures, and even coma.[2,10] Hemiplegia is a symptom that is rarely found in cases of hypoglycemia with a percentage of <3%. There were no differences based on gender, age, and cause of hypoglycemia.[10,11] There were more cases of right hemiparesis than left. The mechanism of hemiparesis is not known with certainty. Selective regional vulnerability is the most acceptable hypothesis. Differences in metabolism, neuronal density, and vascularity may contribute to the response of each brain region to hypoglycemic.[12,13]

Hemiplegia hypoglycemia mimics the symptoms of a stroke so that the diagnosis of hypoglycemia is often delayed. There are several conditions in which hemiplegia is often highly suspected as a stroke such as no history of diabetes, hypoglycemia due to endogenous factors such as insulinoma and adrenal tumors, elderly patients where cerebrovascular disease is common, and when there are no other manifestations of hypoglycemia.[12] This causes the treatment of hypoglycemia to be delayed which makes the patient's prognosis worse. It also causes unnecessary imaging examinations to be performed.[13] In this case, blood glucose correction did not provide rapid and complete clinical improvement, so a CT scan of the head was performed with the result that there was no infarction or bleeding.

CONCLUSION

Hemiplegia hypoglycemia is a rare case and is an important differential diagnosis for cases with suspected stroke. Rapid correction of blood sugar will provide significant clinical improvement, so blood sugar examination is an action that must be done immediately to evaluate the possibility of hypoglycemia in cases with suspected stroke. In cases of hypoglycemia with symptoms that have not improved after blood sugar correction, additional imaging studies may be performed to look for other causes.

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REFERENCES

1. Workgroup on Hypoglycemia, American Diabetes Association. Defining and reporting hypoglycemia in diabetes: a report from the American Diabetes Association Workgroup on Hypoglycemia. Diabetes Care. 2005;28(5):1245-9.
2. Santra G, Roy D. A study on etiological spectrum of hypoglycemia in nondiabetic patients in a rural medical teaching institution. Int J Health Allied Sci. 2018;7:83-8.
3. Auer RN, Siesjö BK. Hypoglycaemia: brain neurochemistry and neuropathology. Baillieres Clin Endocrinol Metab. 1993;7(3):611-25.
4. Starks L. Hypoglycemic hemiplegia: a case study. Heart Lung. 1995;24(4):330-2.
5. Singh RJ, Doshi D, Barber PA. Hypoglycemia Causing Focal Cerebral Hypoperfusion and Acute

Stroke Symptoms. Can J Neurol Sci. 2021;48(4):550-2.
6. Seth P, Bery A, Kumar Gupta A. Clinical Profile of Hypoglycemia in Diabetic Patients: A Prospective Study in a Tertiary Care Hospital. AJRIMPS. 2018;4(1):1-7.
7. Kandi S, Deshpande N, Rao P, Ramana KV. Alcoholism and Its Relation to Hypoglycemia – An Overview. American J Med Stud. 2014;2(3):46-9.
8. Hammerstedt H, Chamberlain SL, Nelson SW, Bisanzo MC. Alcohol-related hypoglycemia in rural Uganda: socioeconomic and physiologic contrasts. Int J Emerg Med. 2011;4:5.
9. Moen MF, Zhan M, Hsu VD, Walker LD, Einhorn LM, Seliger SL, Fink JC. Frequency of hypoglycemia and its significance in chronic kidney disease. Clin J Am Soc Nephrol. 2009;4(6):1121-7.
10. Cryer PE. Hypoglycemia, functional brain failure, and brain death. J Clin Invest. 2007;117(4):868-70.
11. Matsuda, T, Iwasaki, M, Yoshioka. A case of hemiplegia with hypoglycemia possibly associated with hemodynamic change. Diabetol Int. 2015;6:336-4.
12. Yoshino T, Meguro S, Soeda Y, Itoh A, Kawai T, Itoh H. A case of hypoglycemic hemiparesis and literature review. Ups J Med Sci. 2012;117(3):347-51.
13. Shen X, Liu H, Hu Z, Hu H, Shi P. The relationship between cerebral glucose metabolism and age: report of a large brain PET data set. PLoS One. 2012;7(12):51517.

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