Recurrent Hypoglycemia in an 80-Year-Old Diabetic Uremic Female Presenting as Transient Hemiparesis: A Case Report

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Abstract

Recurrent hypoglycemia is not uncommon in patients taking sulfonylurea, especially elder patients with poor renal function. Hypoglycemic hemiparesis is rare and can be misdiagnosed as cerebral infarction. We herein present a case of transient hypoglycemic hemiparesis which developed as recurrent hypoglycemia in an 80-year-old diabetic uremic female. She was sent to the emergency room due to the loss of consciousness. A prompt dextrose supply corrected the situation, but recurrent hypoglycemia and transient hemiparesis developed the next morning. The plasma glucose level was 31 mg/dl and 41 mg/dl, respectively. Early diagnosis of transient hemiparesis and optimal glycemic control is critical in elderly patients, because hypoglycemia may lead to a fatal clinical course if not treated promptly.

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**Key words:** recurrent hypoglycemia, transient hemiparesis, glycemic control, elder

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Introduction

Hypoglycemia is the major risk associated with the treatment of diabetes, particularly in elderly people with comorbidities. Recurrent hypoglycemia is not uncommon in patients taking sulfonylurea, especially in patients with poor renal function [1].

Delayed or inadequate treatment of hypoglycemia may result in neurological sequelae. Among them, hemiparesis is a rare sign and is often overlooked [2].

We herein present a case of transient hypoglycemic hemiparesis which developed as recurrent hypoglycemia in an 80-year-old diabetic uremic female.

Case Report

An 80-year-old female was diagnosed with type 2 diabetes mellitus and end-stage renal disease had been on hemodialysis for four years, and was receiving an oral hypoglycemic agent (glimepiride 1 mg/day). She was admitted to our emergency department due to loss of consciousness. She had a previous history of coronary artery disease status post stent, hip fracture status post operation, and recent left peripheral arterial occlusive disease status post percutaneous transluminal angioplasty.

She underwent hemodialysis on the morning of the admission day, and then went home to eat lunch, though she did not have a good appetite. She took a nap after taking a walk with her daughter in the afternoon. Her family found her with cold sweat and could not wake her up at dinnertime. She was then sent to the emergency room around 7 pm for help.

On examination, the patient was 152.4 cm in height, 69.1 kg in weight, E3V2M5, drowsy, and with an initial blood pressure of 158/72 mmHg. Laboratory findings showed the following: glucose level 31 mg/dl, insulin 45.8 mU/l (3.0-25.0), C-peptide 20.81 ng/ml (0.81-3.85), HbA1c 5.8%, TSH 0.9114 ulU/ml, Cr 5.9 mg/dl, AST 35 U/L, WBC 13120/ul, segment 86%, lymphocyte 7%, eosinophil 3%, and Hgb 10.3 gm/dl.

She was administered 50% dextrose 20 ml intravenously three times, and finger sugar was checked every 1 hour. After intravenous administration of glucose, the serum glucose level was up to 178 mg/dl at 10 pm that night, and the patient showed full recovery of her neurological condition and consciousness. Glucose was supplied orally instead of a continuous intravenous supply, due to fluid restriction with the uremic status. Recurrent hypoglycemia (serum glucose 41 mg/dl) without symptoms was noted at 06:40 am the next morning; 50% dextrose 20 ml intravenously was given, but the serum glucose level remained around 41 mg/dl. A sudden onset of right limb weakness and slurred speech occurred around 10 am. On
examinations, right hemiparesis (upper extremities motor G2-3/G4-5, lower extremities motor G2-3/G4-5), E4M6V5, but no facial palsy and no dysphagia were noted. 50% dextrose 20 ml was administered intravenously twice, with 10% dextrose given at 50 ml per hour, and then 50% dextrose at 10 ml per hour. Muscle power returned 30 minutes after dextrose administration, and there was no neurological deficits. Brain MRI performed 3 hours after transient hemiparesis showed normal ventricles and sulci, and no evidence of an abnormal signal or space-occupying lesion (Fig. 1). The patient was discharged on the 5th-admission day without neurological sequelae.

Fig. 1  Brain MR image performed for this 80-year-old female, 3 hours after transient hemiparesis, revealed no evidence of an abnormal signal or space occupying lesion in T2-weighted and FLAIR images of both basal ganglia.

Discussion

Hypoglycemia is common in diabetes treatment, and its incidence is rising in recent years because of the increasing awareness of diabetic control in the general population and medical society [3]. The biochemical threshold for hypoglycemia is generally around 70 mg/dL [4]. Self-treatment by ingestion of glucose tablets or carbohydrate containing juices, or candy can effectively ameliorate asymptomatic or mild-moderate symptomatic hypoglycemia within 15-20 minutes. Initial management of severe hypoglycemia consists of administration of intravenous glucose 25 g bolus, followed by
infusion at a rate of 2 mg/kg/min for as long as necessary for the insulin or sulfonylurea to wear off [5]. Dextrose infusion stopped before achieving the target dosage due to the normalization of blood sugar value and the return of the consciousness of the patient, in addition to the fluid restriction necessary for this uremic patient. However, on admission night, repeat bedside glucose determination was performed every 60 min for the first two hours to detect the recurrent hypoglycemia in this patient. The recurrent hypoglycemia developing in this patient revealed the inadequacy of the treatment.

Nearly 32% of patients who were admitted to the hospital for sulfonylurea-induced hypoglycemia developed recurrent hypoglycemia [1]. Certain factors, such as the coronary artery disease and poor renal function in this diabetic patient taking sulfonylurea, have been associated with an increased risk of developing recurrent hypoglycemia [1]. The prevalence of symptomatic hypoglycemia in stable diabetic hemodialysis patients undergoing pharmacological therapy was up to 50% [6]. Sulfonylureas, among other oral hypoglycemic agents, are considered to cause hypoglycemia in uremic patients due to high protein binding and delayed degradation [7,8], and therefore should be avoided.

The low HbA1c value (5.8%) revealed tight sugar control in this patient, but the multiple comorbidities, together with the increased mortality risks in this kind of patient warrant a less-aggressive approach to glycemic control [9].

The most common neuroglycopenic symptoms are confusion and personality change, and hemiparesis is rare [10]. There were about 200 case reports of hypoglycemic hemiparesis in literature reviews and right-sided hemiparesis predominated [2].

Some studies reported characteristic MRI findings of severe hypoglycemia or hemiparesis [11], but these did not exist in this patient, perhaps due to rapid correction of the hypoglycemia. Early diagnosis of hypoglycemic-hemiparesis is critical, because if not treated with prompt glucose administration, hypoglycemia may lead to a fatal clinical course.

In conclusion, recurrent hypoglycemia is not uncommon in patients taking sulfonylurea, especially elder patients with poor renal function. Hypoglycemic hemiparesis, frequently misdiagnosed as stroke, can result in permanent neurological damage if unrecognized. Clinicians should be alert to the increased risk of recurrent hypoglycemia in uremic elderly patients with diabetes taking sulfonylurea.

References


復發性低血糖於一位 80 歲糖尿病洗腎病患以暫時性偏癱來表現：個案報告

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摘 要

復發性低血糖常見於服用磺醯尿素的病人，特別是老人合併腎功能不良者。低血糖造成偏癱並不常見，且可能被誤為腦梗塞。我們在此報告一位 80 歲糖尿病洗腎病患，她因低血糖造成昏迷而入院，給予葡萄糖注射情況好轉後隔天早上又復發低血糖，並且出現暫時性右側偏癱的現象，血糖值分別為 31 mg/dl 及 41 mg/dl。早期診斷低血糖造成的偏癱以及合理控制老年糖尿病患血糖相當重要，因為低血糖若無適當治療將導致嚴重後果。
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