



Case Report on: Management and Outcome on Drug-Induced Hypoglycemia with Diabetic Nephropathy.

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ABSTRACT

Introduction: Diabetes patients commonly experience hypoglycemia, typically brought on by pharmacological treatment. Obtained adequate glycemic control is frequently hampered by avoidance and fear of hypoglycemia. **Case presentation:** A 56-year-old male presented in rural hospital Wardha with altered sensorium, which was sudden in onset, progressive, and no aggravating or relieving factors and no associated complications. The patient had known complaints of hypertension and diabetes mellitus since ten years ago and is on medication: no h/o seizures, fever, cough, cold chest pain, breathlessness, orthopnea. The patient had a past history of CVE 3 years back, having left-sided weakness. On physical examination body temperature was 102°F with febrile, pulse-68 b/m, and respiration- 20 breaths/m, blood pressure was $120/80$ mm of Hg, bilateral air entry present, $\text{sI}s2$ present, conscious oriented, soft abdomen. Patient admitted with above-mentioned complaints in H.D.U., all routine investigations done and reports attached, patient's Hemoglobin was 9.7 gm%. The patient's random blood sugar was 73 mg/dl, E.C.G. done s/o normal sinus rhythm, and chest x-ray done, which was normal. USG abdomen and pelvis did s/o grade 2 RPD in B/L kidneys with multiple cortical cysts grade 1 Prostatomegaly. CT brain done s/o chronic white matter ischemic changes, age-related cerebral atrophy, few chronic lacunar infarcts in the right frontal lobe, bilateral basal ganglia, and brain stem present. After investigation medical treatment were started under the supervision of a physician, patient was clinically stable and discharged. **Conclusion:** Early diagnostic evaluation and medical management can prevent the severity of the disease and its complications.

Keywords: Drug, hypoglycemia, diabetes mellitus, diabetic nephropathy

INTRODUCTION:

When a patient presents impaired mental status, drug-induced hypoglycemia should be considered a severe side effect and part of the differential diagnosis for hypoglycemia. According to one study, drug-induced hypoglycemia was the cause of 23% of hospitalizations for drug-related adverse events or 4.3% of all hospitalizations. In a different study, the median hospital stay for drug-induced hypoglycemia was four days, and the death rate was 1.3%. Although the majority of diabetes patients on glucose-lowering medications, mainly sulfonylureas and insulin, were the ones who reported experiencing drug-induced hypoglycemia, many other nondiabetic pharmacological substances have also been linked to the condition¹.

The literature provides inadequate descriptions of drug side effects. A review of safety reporting in 192 randomized drug trials found that only 39 and 29 percent of trial reports, respectively, adequately defined the severity of clinical and laboratory adverse effects, and only 46 percent of trials specified the frequency of specific reasons for stopping study treatment due to toxicity. Seltzer noted that the number of drug-induced hypoglycemia cases reported in the literature between 1940 and 1989 was only 1418, which is likely an undercount. Drug-induced hypoglycemia can be difficult to diagnose and treat, but systematic reviews of the harm literature can help doctors identify possible offenders in patients who may be at risk^{1,2}.

The Endocrine Society's Hypoglycemia Task Force created the most recent clinical guidelines for treating and preventing hypoglycemia. The Task Force requested this evaluation with the goals of assessing the degree to which clinical research data supports a link between drug use and hypoglycemia and, where practical, evaluating the size of this association. Additionally, the Task Force sought to improve a lengthy list of medications that can result in hypoglycemia².

Diabetes patients frequently experience hypoglycemia, typically brought on by pharmacological treatment. Obtained adequate glycemic control is commonly hampered by avoidance and fear of hypoglycemia. Hypoglycemia also raises the risk of morbidity and mortality significantly. An additional risk factor for hypoglycemia occurs in individuals with chronic kidney disease (CKD), which increases the risk associated with diabetes. Additionally, CKD reduces the therapeutic options available for treating diabetes and increases the risk of cardiovascular disease and death. This review is an update and expansion of a previous paper we published on the issue, with a more thorough examination of the drugs in patients and challenges faced by healthcare professionals in this typical clinical scenario. From January 1989 to January 2015, PubMed and MEDLINE were searched for articles on diabetes mellitus, hypoglycemia, chronic kidney disease, diabetic nephropathy, diabetic kidney disease, and chronic renal insufficiency².

Cardiovascular disease's the leading cause of morbidity and mortality in hypoglycemia and CKD. Several conventional primary cardiovascular risk factors, such as diabetes, hypertension, and hyperlipidemia, are linked to renal illness. It is now debatable whether hypoglycemia per se is a risk factor in

and of itself or merely a sign of cardiovascular fatigue failure. The effects of hypoglycemia on oxidative stress, endothelial dysfunction, ST-segment lengthening, and the precipitation of arrhythmias via sympathetic nervous system activation are a few theoretical, experimental, and clinical considerations that point to a causal relationship. People with CKD may also experience other risk factors for hypoglycemia, such as altered medication metabolism, albuminuria, malnutrition, decreased renal glucose release and insulin clearance, and challenges related to dialysis, in addition to inadequate hormonal counter-regulation.

When choosing the best antidiabetic medications to utilize in diabetes patients, the presence of CKD provides a hurdle. In all types of CKD, certain medications (glipizide, meglitinides, DPP-4 inhibitors, thiazolidinediones, albiglutide, dulaglutide, orlistat, colesevelam, and insulin) might be used with caution or at a lower dose. Other medications (metformin, glibenclamide (glyburide), glimepiride, gliclazide, exenatide, liraglutide, alpha glucosidase inhibitors, and SGLT2 inhibitors), in particular in those with moderate to severe CKD (eGFR 45-60 mL/min/1.73 m²), are not recommended due to their decreased efficacy and/or increased risks of hypoglycemia³.

CASE PRESENTATION:

The 56-year-old male was admitted to a rural hospital in Wardha with altered sensorium, which was sudden in onset, progressive, and no aggravating or relieving factors and no associated complications. The patient had known complaints of hypertension and diabetes mellitus since ten years ago and is on medication: no h/o seizures, fever, cough, cold chest pain, breathlessness, orthopnea. The patient had a history of CVE 3 years back and left-sided weakness. On physical examination, body temperature was 102⁰F with febrile, pulse-68 beats/min, respiration- 20 breaths/min, blood pressure was 120/80 mm of Hg, bilateral air entry present, s1s2 present, conscious oriented, soft abdomen. Patient admitted with the above-mentioned complaints in HDU, all routine investigations done and reports attached, patient's Hemoglobin was 9.7 gm%. The patient's random blood sugar was 73 mg/dl, ECG done s/o normal sinus rhythm, chest x-ray done which was normal. USG abdomen and pelvis did s/o grade 2 RPD in B/L kidneys with multiple cortical cysts grade 1 Prostatomegaly. CT brain has done s/o chronic white matter ischemic changes, age-related cerebral atrophy, few chronic lacunar infarcts in the right frontal lobe, bilateral basal ganglia, and brain stem. After investigation, they started medical treatment under the supervision of a physician. The patient is clinically stable and is now being discharged.

All Routine investigations were done; Laboratory reports revealed that Hemoglobin was 9.7gm%, MCHC-34.1, MCV-74.1, MCH-25.3, Total Red blood cell count was 3.82, total White blood cells count- 11200, Total Platelet Count- 2.11, Hematocrit-28.3. R.B.C.s- Normocytic Hypochromic with mild aniso-poikilocytosis showing few microcytic and pencil cells. Platelets –on the lower side of the normal range. No haemo-parasites were seen. Kidney function test revealed that, urea 98mg/dl, creatinine 5.7 mg/dl, sodium 126 mEq/l, potassium 5.1mEq/l. Total cholesterol-166, triglycerides-104, dHDL-104, LDL-95, VLDL-21.

Therapeutic management in hospital: Inj.ceftriaxone 1gm IV BD x 5 days, Inj.D25% IV TDS for 5 days, Tab.Nicardia 10 mg BD, Tab.Ecosprin 75/25 IV HS, Tab.Shelcal 500mg OD,Tab.Vogli 0.2 OD, Tab. Lasix BD.

Nursing management: Advised to patient's caregivers to give a diet high in vegetables, fruits, legumes, and whole grains, and usually provide an adequate amount of vitamins and macro and micronutrients to support the health Patient. The patient's family members were so worried about his illness that sometimes the patient showed anger and became aggressive in his behaviors and related diseases he had so many queries and doubts. That was clear by health care personnel. The patient and his family members' psychological counseling was done. The doctor advised them to liver transplantation. But the patient was not willing to stay in the hospital. The patient was stable at present; hence the patient was being discharged.

DISCUSSION:

The 56-year-old male was admitted to a rural hospital in Wardha with altered sensorium, which was sudden in onset, progressive, and no aggravating or relieving factors and no associated complications. The patient had known complaints of hypertension and diabetes mellitus since ten years ago and is on medication. Patient admitted with the above-mentioned complaints in H.D.U., all routine investigations done and reports attached, patient's Hemoglobin was 9.7 gm%. The patient's random blood sugar was 73 mg/dl, C.T. brain done s/o chronic white matter ischemic changes, age-related cerebral atrophy, few chronic lacunar infarcts in the right frontal lobe, bilateral basal ganglia, and brain stem present. After investigation medical treatment was started under the supervision of physician. The patient is clinically stable and is now being discharged³.

When pharmacists are aware of the potential medication-related issue of DI hypoglycemia and provide close monitoring and appropriate use of the suspected medications, adverse consequences can be prevented or reduced. It is highly recommended to use resources to personalize medication for elderly patients with coexisting conditions, be ready for patients to ask questions about diabetes mellitus, and instruct patients, their families, and caregivers about adherence and associated management and prevention measures⁴. This page is a list of 164 different drugs that have been linked to hypoglycemia based on a thorough study of the literature. Most exposures were compatible with normal dosing rather than an overdose, and hypoglycemia incidents were frequently symptomatic and severe.

In recorded cases, patients with severe systemic disease, renal or hepatic failure, use of insulin or sulfonylureas, or advanced age are commonly described⁵. Most of the evidence for these associations came from uncontrolled research that hardly ever mentioned a challenge/rechallenge design or dose-response relationship. Additionally, the statistical measures of associations were somewhat unpredictable (i.e., they had broad CIs). Some of these correlations may be fictitious because the presented evidence was often poor quality⁵.

CONCLUSION:

A 56-year-old male presented in rural hospital Wardha with altered sensorium, which was sudden in onset, progressive, no aggravating or relieving factors and no associated complications. The patient had known complaints of hypertension and diabetes mellitus since ten years ago and is on medication. After investigation, medical treatment was started under the supervision of a physician. The patient is clinically stable and is now being discharged. Early diagnosis and treatment can prevent the severity of the disease and its complications.

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