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Case Report

A Case Report on Combination Formulation Glimepiride and Metformin Induced Hypoglycemia

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Abstract: The medications glimepiride and metformin are used to treat type 2 diabetes. The pancreatic cells that create insulin are stimulated by glimepiride, which aids in removing sugar from the circulation. Metformin slows down the creation of sugar by liver cells and delays the absorption of sugar from the intestines. A 56-year-old female patient was known case of Hypertension and IHD. She came to tertiary care hospital with complaint of sudden drowsiness and falling at home. Patient had a history of Ischemic Heart Disease (IHD) and Coronary Artery Bypass Graft Surgery (CABG) done before 2 weeks and newly detected Diabetes Mellitus (DM) for which she was prescribed with T. Glycomet GP (0.5/500) (1-0-1). To manage an Adverse Drug Reaction (ADR), the doctor prescribed the suspected drug on hold until the symptoms improved. Close monitoring during treatment course, creating awareness, recognition of the problem, and careful monitoring of all patients who receive this medication are required to prevent serious adverse drug reactions of this drug.

Keywords: Glimepiride, Metformin, Diabetes Mellitus, Hypertension, Adverse Drug Reaction, Coronary Artery Bypass Graft Surgery (CABG).

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INTRODUCTION

Diabetes mellitus is a chronic endocrine disorder marked by hyperglycemia caused by absolute or relative insulin deficiency. A series of metabolic illnesses known as diabetes mellitus are characterized by persistent hyperglycemia brought on by deficiencies in insulin secretion, insulin action, or both. The significance of insulin as an anabolic hormone leads to metabolic irregularities in carbohydrates, lipids, and proteins. These metabolic abnormalities are brought on by insufficient insulin levels to produce an adequate response and/or insulin resistance of target tissues, primarily skeletal muscles, adipose tissue, and to a lesser extent, liver, at the level of insulin receptors, signal transduction system, and/or effector enzymes or genes [1]. Diabetes can be caused by a variety of factors, but

the vast majority of cases are classified as Type 1 or Type 2 diabetes. Type 1 diabetes is caused by the autoimmune destruction of insulin-secreting pancreatic -cells, resulting in insulin deficiency and subsequent hyperglycemia. Type 1 diabetes affects approximately 10-15% of all diabetics. Type 2 diabetes, which accounts for 85-90% of all diabetics, is characterized by an abnormal insulin secretion as a result of peripheral resistance [1]. While type 1 diabetes typically manifests in childhood or adolescence and type 2 diabetes later in life, clinical manifestation and progression vary greatly, and some patients do not progress at all [2].

Glimepiride and Metformin which belongs to a group of medicines called Anti-diabetic agents. It is used to treat type 2 diabetes mellitus when diet,

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exercise and the single agent does not result in adequate glycemic control [3]. Type 2 diabetes is a chronic medical condition in which the body does not make enough insulin, or the produced insulin does not work well. Symptoms include excessive urination, excessive thirst, hunger, fatigue, and blurred vision. Glimepiride lowers blood sugar by causing the pancreas to produce more insulin and helps the body use insulin efficiently [4]. Metformin is a biguanide which effectively reduces the total amount of sugar released into the blood by the liver. In general, metformin is thought to be secure and

well-tolerated. Up to 30% of patients using metformin have common gastrointestinal side symptoms include diarrhea, nausea, and vomiting [5]. Chest pain, headache, diaphoresis, hypoglycemia, weakness, and rhinitis are less frequent symptoms that some people report. Long-term metformin use is linked to decreased vitamin B12 levels, which should be watched closely in patients with peripheral neuropathy or anemia. B12 dietary supplements may be required [6]. Other adverse effects of Metformin and Glimepiride are mentioned in table 1.

Table 1: Adverse drug reactions of Metformin and Glimepiride [7]

❖ Common: (Metformin and Glimepiride)
• Endocrine metabolic: Hypoglycemia (4% - 19.7%). • Gastrointestinal: Nausea (5%), Diarrhea (53%), Malabsorption syndrome (Upto 9.9%) • Neurologic: Asthenia (9%), Headache (8%)
❖ Serious:
• Endocrine metabolic: Lactic acidosis (Metformin) • Hepatic: Hepatitis (Metformin) • Dermatologic: cutaneous Hypersensitivity (less than 1%) , lichenoid drug eruption (Glimepiride)

CASE REPORT

A 56-year-old, female came with the complaint of sudden drowsiness in the emergency department. Patient was not regularly having her food from past 2-3 days but was taking medications regularly. Patient had a history of Ischemic Heart Disease (IHD), Hypertension (HTN) and newly detected Diabetes Mellitus (DM) and undergone Coronary Artery Bypass Surgery (CABG) surgery 2 weeks ago. The patient was prescribed with Tab. Lasilactone (20/50 mg) (1/2-0-0) for Hypertension and Tab. Glycomet GP (0.5/500 mg) (1-0-1) for Diabetes Mellitus in the discharge medication due to which patient had a complaint of sudden drowsiness. Then she was admitted in the hospital for further investigations and treatment. During the treatment the patient was continued with Tab. Glycomet GP (0.5/500 mg) (1-0-1) and the laboratory findings suggested that the patient was suffering from hypoglycemia (low blood sugar level). Later on, Tab. Glycomet GP was discontinued after 48 hours of proper observation and was switched on to insulin Inj. HAI (TDS). A day later patient condition was improved and was discharged.

DISCUSSION

Diabetes is a chronic condition that needs ongoing medical attention and patient education on self-management to lower the risk of long-term problems and prevent acute complications [8]. The major goals of managing diabetes is to attain and keep blood glucose under control as well as lessen the likelihood of long-term problems. Numerous studies have demonstrated that effective care of

diabetes today can limit, postpone, or even prevent the chronic consequences of the disease. However, this aggressive diabetes management may come with a higher risk of hypoglycemia [9]. To avoid organ and brain damage, hypoglycemia must be treated right away and is a serious medical emergency. Symptoms might range from autonomic activation to behavioural changes to decreased cognitive function to seizures or coma, depending on the length and severity of the hypoglycemia.

Neurologic harm, injury, cardiovascular events, and mortality are among the short- and long-term effects [10]. Medications for diabetes, such as sulphonylureas and insulin, are some of the most frequently used reasons for hypoglycemia in diabetic people [11]. As the most often prescribed anti-diabetic medication, Metformin occasionally causes episodes of hypoglycemia when there is an imbalance between food intake and Metformin dosage [12]. Insufficient meal consumption or an increase in exercise in relation to taking medication and eating can potentially cause hypoglycemia. The most frequent side effect of strict glycemic control in the elderly is hypoglycemia, which can be exacerbated by a number of co-morbid conditions including renal impairment, chronic heart disease, malnutrition, and polypharmacy. Individualized blood sugar goals should be set with some degree of safety, especially for patients with long-standing diabetes, those at a high risk of developing severe hypoglycemia, and/or those with several co-morbid conditions.

CONCLUSION

In addition to other potentially harmful effects, hypoglycemia may exacerbate vascular events, which is a major limiting factor in the tight glycemic management of diabetes. Based on the patient's features, glycemic control ought to be customized with some level of safety. The main issues to maintain good glycemic control, reduce the risk of hypoglycemia, and prevent long-term complications are recognition of hypoglycemia risk factors, blood glucose monitoring, selection of appropriate regimens, and education programmes for healthcare professionals and patients with diabetes. Effective counselling is required for the treatment to be successful. Close monitoring during therapy and cautious management of all patients using this medicine are required to prevent such adverse events. This shows that therapy is very important in preventing such negative reactions.

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Conflict Of Interest

The authors declare that they have no conflict of interest.

Abbreviations

DM – Diabetes Mellitus
IHD – Ischemic Heart Disease
HTN- Hypertension
CABG- Coronary Artery Bypass Graft Surgery
ADR- Adverse Drug Reaction
HAI- Human Actrapid Insulin
TDS- Three times a day

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