

Tip of the Iceberg

Uncontrolled Diabetes Patient Case

CASE

JK is a 67 year old female with uncontrolled diabetes [HbA1c = 8.7%]. During a medication review, it was discovered that she was having symptoms of overnight hypoglycemia (tremors and sweating). Upon further questioning, it appeared that she had been occasionally skipping dinner while continuing to take glyburide.



So, what's happening here?

Sulfonylureas (glyburide, gliclazide, glimepiride, repaglinide) were one of the original staple therapies in the treatment of DM2. The main mechanism of action of sulfonylureas is to induce pancreatic secretion of insulin **regardless of food ingestion**.

So, when a patient skips a meal and still takes their sulfonylurea (such as glyburide in the case of JK), their body is still induced to secrete more insulin, but there was no food/carbohydrates to help buffer the glucose lowering effect of the "extra" insulin. This, then, can potentially lead to hypoglycemic episode.

What did the Pharmacist do?

Our pharmacist counselled the patient on the best way to use/administer glyburide with an emphasis on the reason of why she may have been experiencing hypoglycemia and how to avoid it in the future. He confirmed with the patient that they understood the signs/symptoms of hypoglycemia and how to treat hypoglycemia if it occurs. The pharmacist also made a referral to diabetes education centre.

By conducting a thorough medication review and history, this finding could have potentially prevented a severe hypoglycemic event as any further titration of DM therapy may further increase her risk of hypoglycemia.

Sick day management of diabetic medications for patients with DM2

- Some patients may benefit from in-depth discussion regarding sick day management of diabetes:
 - Elderly population
 - Patients with cognitive dysfunction
 - Patients with Hx of hypoglycemia
 - Patients with Hx of DKA or HHS
- Depending on the medications that a patient is taking, a decrease in oral intake could potentially lead to hypoglycemia, so dose adjustments or holding of doses may be warranted:
 - Insulins: dose/units of insulin may need to be adjusted if there is alteration in food intake → usually only bolus insulin doses may need adjustment
 - SGLT2 inhibitors and GLP1 agonists: when used in conjunction with sulfonylureas and/or insulin, can lead to hypoglycemia as they usually lower the overall dose requirements of the other glucose-lowering agents. They can also accumulate if there is altered kidney function due to decreased fluid intake
 - Metformin: while it is not associated with hypoglycemia, there can be accumulation if patient is dehydrated (which can lead to altered kidney function).
- Suggest that patients who are sick and have altered intake should check their glucose more frequently (especially if they are on glucose-lowering agents)
- Increase fluid intake (sugar-free) to prevent dehydration
- If unable to eat as normal, suggest that patients try eating foods that contain carbohydrates (ex: juice, yogurt, apple sauce, etc)