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Surreptitious use of glimepiride in a non-diabetic causing resistant hypoglycemia

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The case study begins with a 63-year-old male with history of bipolar disorder, polysubstance abuse was found unresponsive on the floor of his apartment. He was last seen normal 12 hours back. EMS found his fingerstick glucose to be <10 and gave one dose of intramuscular glucagon. His subsequent fingerstick glucose readings were 17 and 42. In the ED, he was given multiple doses of 50% dextrose and 10% dextrose infusion however, his blood glucose would transiently rise and then dip again. He was given one dose of dexamethasone as per endocrinology recommendation. His blood sugars finally stabilized, and his mentation improved. He was a non-diabetic with Hemoglobin A1c of 5.7%. He lived alone and denied use of any anti-diabetic agents. His hepatic, thyroid and renal function tests were normal. Other pertinent labs included elevated C-peptide 7.31 (0.78-5.19 ng/mL), intact proinsulin 18.2 (<8 pmol/L), fasting insulin 36 (3-19 uIU/mL). Glutamic acid decarboxylase and beta-hydroxybutyrate were negative. Serum acetaminophen level, salicylate level, ethanol level was negative. Urine drug screen was unremarkable except for opiates. Cosyntropin test was negative. Sulfonylurea screen later came back positive for glimepiride. He didn't have any further episodes of hypoglycemia during the hospital stay. Hypoglycemia in non-diabetic is an uncommon condition and can be diagnostically challenging. Multitude of causes like drugs, critical illness, non-islet cell tumor, hormonal deficiency or surreptitious use of insulin or insulin secretagogues can result in hypoglycemia. Documenting Whipple's triad is crucial before extensive evaluation of hypoglycemia. If no cause is evident from thorough history and physical examination, laboratory evaluation with measurement of insulin, pro-insulin, C-peptide, beta-hydroxybutyrate, insulin antibodies and oral hypoglycemic agent screen during hypoglycemic episode is warranted. Unlike exogenous insulin use where plasma C-peptide and proinsulin values are suppressed, they are elevated in insulinomas, oral hypoglycemic agent-induced hypoglycemia, and autoimmune hypoglycemia. While serum sulfonylurea or meglitinides are detected only in oral hypoglycemia agent-induced hypoglycemia, the presence of insulin or insulin receptor antibodies will distinguish insulin autoimmune hypoglycemia from insulinoma. It is concluded that presence of plasma sulfonylurea is diagnostic of sulfonylurea-induced hypoglycemia in non-diabetic individuals.

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