DRUG ABUSE MANIFESTING AS PERSISTENT HYPOGLYCEMIA: A CASE REPORT OF HIDDEN SULFONYLUREA POISONING

Frederick B. Peng, BS[1] and Sharon Li, MD[2]

1. Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA
2. Department of Medicine, Thomas Jefferson University Hospital, Philadelphia, PA

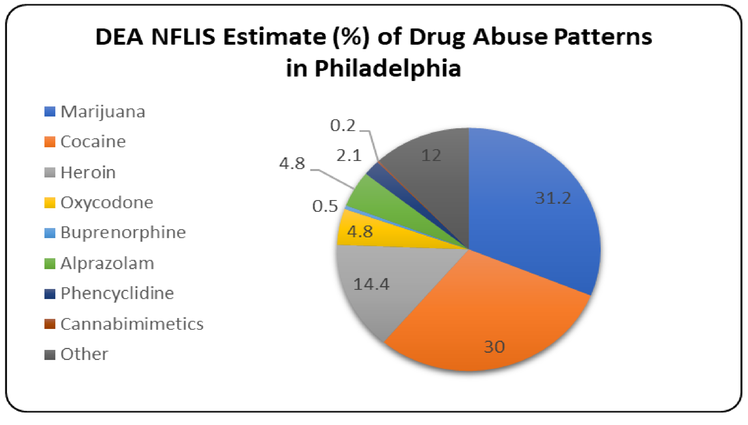
Background

- Prescription drug abuse is on the rise. According to the Philadelphia Department of Health data in 2017, up to 26% of adults may be using benzodiazepines and/or opioids (Table 1).
- 12% or 1/8 Philadelphians are estimated to be current benzodiazepine users and have taken one in the last 7 days. Benzodiazepine use is most common among people with household incomes below $25,000 and among the 45-54 years old age group (17.7%) [1].
- Most current users (84%) obtain benzodiazepines from health care providers [1]. However, with new policies to closely monitor controlled substances, those with dependence on benzodiazepines may turn to alternative sources (such as black market vendors) to obtain the drug.
- Street-obtained versions may be substituted or mixed with alternative products to maximize profits for vendors. Unsuspecting users can be subject to life-threatening side effects.
- To clinicians caring for these patients, the composition of benzodiazepines obtained outside of a pharmacy may not easily be identifiable, making treating intoxications a challenge.

Table 1: Philadelphia Department of Public Health 2017 Estimates of Current Opioid and Benzodiazepine Adult Users

Substance	Estimated Number of Current Philadelphia Adult Users
Benzodiazepine Use Only	92,000
Opioid Use	168,000
Opioid Use Only	106,000
Opioid + Benzodiazepine Use	62,000
No Opioid or Benzodiazepine Use	1,208,000
Total Population	1,636,000

Figure 1: NIH Drug Abuse Trends and Patterns in Philadelphia - 2014 Report



- Statistical reflection of the most frequently seized drugs in Philadelphia by the Drug Enforcement Administration (DEA), National Forensic Laboratory Information System (NFLIS) [2].

Case Report

History of Present Illness: A 45-year-old man with no significant past medical history presented with confusion, diaphoresis and weakness of two days duration. Vitals were significant for tachycardia to 115 and high blood pressures to 220/110. Physical exam showed an anxious, diaphoretic male in mild distress. Point-of-care accuchecks revealed hypoglycemia into the 30s. Despite multiple amps of glucose, he remained hypoglycemic so was started on a D5W, then D10W infusion. He admitted to snorting heroin and taking Xanax (alprazolam); both were obtained from the streets with last use 1.5 days prior to admission. He denied taking any other medications.

Labs: Urine drug screen revealed cocaine, opioids, and benzodiazepines. On admission, his insulin levels were found to be abnormally elevated (up to 27 mIU/L). He also had an elevated proinsulin (50.1 pmol/L), normal c-peptide (2.90 ng/mL), and normal beta-hydroxybutyrate (0.6 mmol/L). His HgA1C was 5.8%.

Imaging: Abdominal MRI revealed no evidence of insulinoma.

Hospital Course: The patient's blood glucose fluctuated during the initial period of his hospitalization. He was intermittently hypoglycemic even several days in, with an episode to 55 mg/dL around noon on hospital day 5. There was no identifiable postprandial correlation. Eventually, his blood glucose stabilized with supportive care only; D10W was weaned off without further hypoglycemic episodes. His sulfonylurea screen came back positive for a high level of glipizide (120 ng/mL). It was determined that the Xanax the patient was taking was probably mixed with sulfonylureas. He was subsequently discharged with a referral for drug rehab.

Figure 2: Patient's Plasma Glucose Levels Over Time

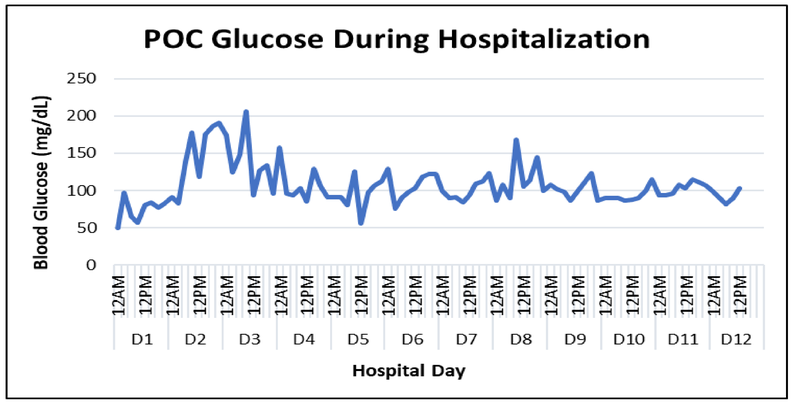
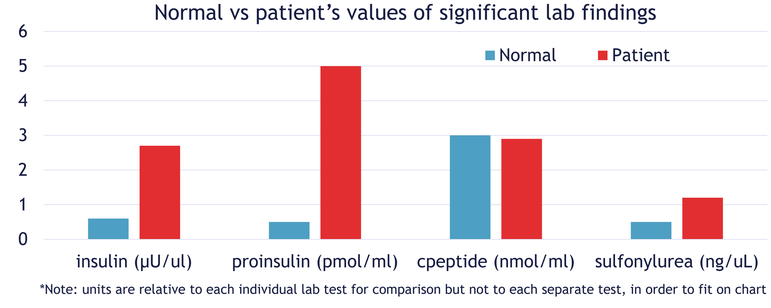


Figure 3: Comparison of patient's lab values to references



*Note: units are relative to each individual lab test for comparison but not to each separate test, in order to fit on chart

Discussion

- Hypoglycemia is a dangerous condition that is fatal if left untreated. It can be due to exogenous insulin overdose, sulfonylurea (SU) overdose, or the presence of an insulinoma.
- This patient satisfied Whipple's triad: (1) hypoglycemia (plasma glucose <50 mg/dL), 2) neuroglycopenic symptoms (i.e. weakness, dizziness, confusion, blurred vision, difficulties with concentration), and 3) prompt relief of symptoms following glucose administration, which raised the clinical suspicion for insulinoma [3]. His insulin, proinsulin, and c-peptide levels suggested excessive endogenous insulin production.
- Lab abnormalities (insulin, proinsulin and c-peptide levels) can look similar in an insulinoma or a patient who has overdosed on SUs. The difference is in the SU level. A patient who otherwise has no risk factors should still be worked up for an insulinoma if they remain persistently hypoglycemic after several days of unknown substance ingestion.
- Our patient's sulfonylurea screen revealed elevated glipizide levels (120 ng/mL) several days after presumed ingestion with 'Xanax.' Given no prior history of liver or kidney disease, it was unusual for him to remain persistently hypoglycemic several days after the ingestion. His blood glucose levels eventually improved off glucose supplementation. The persistent hypoglycemia was likely due to the large amount of SUs mixed into the ' Xanax ' he was buying.
- "Street Valium" or benzodiazepines intermixed with sulfonylureas have previously been reported in case reports with supratherapeutic glyburide levels of 1198 and 647 ng/mL [4]. To our knowledge, this is the first case reported in Philadelphia.

Conclusion

- This case illustrates the potential for unsuspected substances, particularly sulfonylureas, to contaminate street drugs.
- Clinicians should be aware of persistent hypoglycemia being a complication of drug overdose and should perform workup as appropriate.

References

1. Philadelphia Department of Public Health (2017). Prescription Opioid and Benzodiazepine Use in Philadelphia, 2017. CHART, 2(9), 1-6.
2. Lim, S. T. (2014, February 26). Drug Abuse Trends and Patterns in Philadelphia-Update: January 2014. Retrieved October 4, 2017, from https://www.drugabuse.gov/about-nida/organization/workgroups-interest-groups-consortia/community-epidemiology-work-group-cewg/meeting-reports/highlights-summaries-january-2014-6.
3. Okabayashi, T., Shima, Y., Sumiyoshi, T., Kozuki, A., Ito, S., Ogawa, Y., ... & Hanazaki, K. (2013). Diagnosis and management of insulinoma. World journal of gastroenterology: WJG, 19(6), 829.
4. Lung, D. D., Gerona, R. R., Wu, A. H., & Smollin, C. G. (2012). Confirmed glyburide poisoning from ingestion of "street valium". *The Journal of emergency medicine*, *43*(2), 276-278.