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## 214. Toxic Exposures to Novel Anti-Diabetic Agents: Insights From the ToxIC Core Registry

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**Background:** Novel anti-diabetic agents have been introduced to the market in recent years. Glucagon-like peptide 1 agonists (GLP-1) and sodium-glucose cotransporter-2 inhibitors (SGLT-2i) are increasingly prescribed for the treatment of type 2 diabetes mellitus. Case reports and observational data of overdoses with these agents have been reported in the literature.

**Hypothesis or Research Question:** What are the exposures, demographics, and outcomes of patients with toxic exposures to novel anti-diabetic agents reported to a toxicology registry?

**Methods:** A retrospective analysis of the Toxicology Investigators Consortium (ToxIC) Core Registry database was performed to identify cases of exposures to GLP-1 agonists and SGLT-2 inhibitors from January 2010 through December 2024. Cases were identified by substance names. All patients evaluated by a medical toxicologist with exposure to these agents were included in the analysis.

**Results:** A total of 231 cases with exposures to novel anti-diabetic agents were identified. Of these, 180 (77.9%) cases were GLP-1 agonist exposures and 51 (22.1%) cases involved SGLT-2 inhibitors. In the GLP-1 agonist group, the median age was 45 years (range 0.2-97 years), with 105 (58.3%) female patients. The majority of exposures (174 or 96.7%) were intentional, with 3 accidental and 3 unknown. No cases reported a suicidal intent. The most common GLP-1 agent was semaglutide (113 cases, 62.8%), followed by liraglutide (35 cases, 19.4%), dulaglutide (16 cases, 8.9%), tirzepatide (10 cases, 5.5%), and others (6 cases, 3.3%). The majority of exposures presented with gastrointestinal complaints (156 cases, 86.7%), which included nausea (153 cases, 85%), vomiting (101 cases, 56.1%), and abdominal pain (64 cases, 35.6%). Other reported symptoms included diarrhea (18 cases, 10%), fatigue (7 cases, 3.9%), and dizziness (5 cases, 2.8%). Hypoglycemia was not reported in any of the GLP-1 agonist cases. Two cases required critical care level of monitoring and one case required transfer to ICU. In the SGLT-2 inhibitor group, the median age was 62 years (range 2-86 years) with 24 (47.1%) female patients. The majority of exposures (33 or 64.7%) were intentional, 12 (23.5%) accidental, and 6 (11.8%) unknown. The most common SGLT-2 inhibitor was empagliflozin (26 cases, 50.9%), followed by dapagliflozin (14 cases, 27.5%), and canagliflozin (11 cases, 21.6%). Clinical presentations included gastrointestinal symptoms (18 cases, 35.3%), including nausea (14 cases, 27.5%), vomiting (8 cases, 15.7%), and abdominal pain (7 cases, 13.7%). Hyperglycemia and diabetic ketoacidosis

(DKA) were documented in 3 (5.9%) and 2 (3.9%) cases respectively. Hyponatremia was reported in one case. One patient developed euglycemic DKA requiring hospitalization.

**Conclusion:** Novel anti-diabetic agent exposures are increasingly reported to ToxIC. GLP-1 agonist exposures predominantly present with gastrointestinal symptoms and are generally benign. SGLT-2 inhibitor exposures may result in more severe toxicity including euglycemic DKA, particularly in overdose scenarios.

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