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62. Characteristics and outcomes of bupropion overdose patients in the Toxicology Investigators Consortium (ToxIC) registry

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Background: Bupropion use, whether for therapeutic or recre- ational purposes, has been on the rise. Seizure is a common sequela of bupropion poisoning. Prior research into bupropion poisoning often excludes co-ingestants. The purpose of this study is to describe the demographics and outcomes of bupro- pion overdose patients entered into the Toxicology Investigators Consortium (ToxIC) Registry. Our study aims to analyze co-ingest- ants, including benzodiazepines, and association with the inci- dence of seizure or other outcomes.

Methods: This is a retrospective study using the ToxIC Registry, which is a multicenter toxico-surveillance and research network of medical toxicologists. Patients who presented with bupropion ingestion between 2016 and 2020 were included. Analyzed varia- bles included demographics (age, gender, and race), toxic expo- sures, clinical findings during encounter including vital sign abnormalities and electrocardiogram (ECG) changes, incidence of seizure post-exposure, and clinical outcomes including intub- ation, arrhythmia, coma, and death. Data regarding seizure occur- rence were also compared between patients who had a benzodiazepine co-ingestion versus those who did not.

Results: The ToxIC registry had records on 1065 patients with bupropion overdose. Among these, 592 (55.6%) were between the age of 19–65 years. Most subjects were female, 650/1065 (60.8%). Tachycardia (heart rate >140 beats per minute) devel- oped during hospitalization in 309 patients (28.9%). A total of 164 patients (15.3%) had QTc >500 milliseconds on initial ECG, and 176 patients (16.5%) were intubated. Moreover, 328 patients (30.7%) experienced seizure. Among bupropion overdose patients in the registry, 67 (6.3%) received activated charcoal for decontamination. The incidence of seizure in patients who co- ingested benzodiazepines was 7.7% (5/65) compared to 32.3% (323/1000) in those who did not. Ingestion of benzodiazepines with bupropion was associated with lower odds of seizure (OR 0.175, 95 CI =0.069–0.439). Additionally, patients who did not co- ingest benzodiazepine were more likely to present with tachycar- dia (29.9% vs 15.4%, p = 0.012). Interestingly, 26.2% of patients who co-ingested benzodiazepines were intubated, compared with 15.9% of those who did not co-ingest benzodiazepines (p = 0.031). This could be related to the fact that bupropion over- dose patients who co-ingested benzodiazepines had a higher incidence of altered mental status on presentation (56.9% vs 23.8%, p < 0.001). A total of 7 patients (0.7%) died during their hospitalization; 2 in the benzodiazepine co-ingestant group and 5 in the group without benzodiazepine co-ingestion.

Conclusions: This study is consistent with a prior study of poison
center patients with bupropion overdose. When benzodiazepines are ingested along with bupropion, seizures appear to be less common than when bupropion is ingested without benzodiaze- pines. Prospective research analyzing risk of seizure from bupro- pion in the presence or absence of

benzodiazepine coingestants may lead to human trials of prophylactic benzodiazepines in the setting of bupropion overdose to prevent seizure.