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21. A characterization of cases of severe hyperthermia reported to the ToxIC Registry

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Background: Drugs and medications associated with hyperthermia are ubiquitous. Adverse effects and risk of death in the hyperthermic patient are significant. Our objective is to describe a cohort of cases of severe hyperthermia reported to the ToxIC (Toxicology Investigators Consortium) Registry in order to better characterize the clinical effects and outcome in these patients.

Methods: All cases of hyperthermia, defined as a recorded temperature $\geq 105^\circ$ F, reported to the ToxIC Registry between January 1st, 2011 and April 1st, 2014 were extracted using the field specific search function. Descriptive statistics were generated for demographic data, substances involved, clinical effects, treatments, and medical outcomes, as defined by the ToxIC Registry.

Results: Over the study period there were 268 cases of severe hyperthermia. The most common age range was 19–65 years (74.2%, n = 199). 10 cases occurred in individuals less than 6 years old and most were males (62.7%, n = 168). Illicit drugs were identified as the causative agent in 21.3% (n = 57). The most common agent identified was cocaine (5.9%, n = 16). 28 cases (10.4%) were identified as adverse drug reactions. 215 patients (80%) had major CNS abnormalities. The most common toxidrome identified was sympathomimetic (15.0%, n=40) followed by serotonin (13.4%, n=36), anticholinergic (4.9%, n=13), and neuroleptic malignant syndrome (4.5%, n = 12). 63.1% (n = 169) received primarily benzodiazepines or intravenous fluid resuscitation. 80 cases (29.9%) received a specific antidote. Intubation and mechanical ventilation were performed in 29.1% (n = 78) and cardiopulmonary resuscitation in 3 cases. There were 2 deaths reported.

Conclusions: This represents the largest prospective series of severe toxic-hyperthermia ever reported. The most common cases were males with a sympathomimetic toxidrome. Cocaine was the most common agent implicated. Death was a rare outcome, possibly because all cases were cared for by medical toxicologists. These findings may not be generalizable to cohorts other than that reported to the ToxIC Registry.