

## Drug and Substance-Induced Seizures in Adolescents and Young Adults

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### Abstract

**Objective:** There was an unexpected increase in the number of those presenting with drugs related seizures in 2013. We studied the prevalence of drugs causing seizures in adolescents and young adults, utility of investigations including computed tomography of the brain (Brain CT), and outcomes of treatment in the ED and after hospital discharge.

**Methods:** Medical records of patients' age between 10-26 years who presented to our ED from September 2011 to November 2013 with drugs related seizures were reviewed. Seizures had to develop before ED presentation or during ED stay for inclusion to the study. Two chart abstractors collected data from eligible records; and they were not investigators and were blinded to study objectives in an effort to reduce selection bias. We provided more quality control of data collection by having a training session using standardized mock charts and standard definitions of our work. Inter-rater reliability was also performed from 10 medical records and the kappa was 0.84.

**Results:** From 56 eligible medical records, 13 adolescents or young adults presented to our ED in fiscal year 2012 (October 2011-September 2012) with drugs related seizures compared with 39 in fiscal year 2013 (3-fold-increase). Around 80% were male and students. The median age was 17 (16-19) years old (youngest 13-year-old). Drugs commonly used were tramadol (88%), promethazine (33%), and hydroxyzine (19%). The purpose was mainly recreational or copying their friends (89%). Seizure characteristics were recorded in 36 patients, and they were all characterized as a generalized tonic clonic seizure. The median onset of seizures was 4.3 (1.3-6.7) hours after last use. Most of patients were only kept under observation in the ED (77%), and the median time period between triage and ER discharge was 10 (7-13) hours. Brain CT was only performed in 7 patients and the results were all unremarkable. For those who were only observed in the ED without hospitalization, none had further complications at ED discharge. Nobody returned to the ED because of having repeated seizures or other complications within one week after ED or hospital discharge.

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**Conclusions:** Numbers of adolescents and young adults presenting with drugs related seizures increased 3 folds in just a year. The majority used tramadol which is easily purchased over-the-counter. Short ED observation was proved to be safe since almost all patients seized only once and complications were very unlikely. We recommend against routine Brain CT scan for those who seized only once from drug abuse.

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