

## Acetaminophen Overdose and Vomiting: Prevalence, Predictors and in-Hospital Outcomes

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### Abstract

**Introduction:** Vomiting is a common adverse effect following drug ingestion and other toxic exposure. Under normal circumstances, as toxicity resolves, these symptoms gradually improve. Vomiting associated with certain poisons can be detrimental to the treatment of the patient. Although vomiting is commonly the only symptom of early acetaminophen poisoning, it is unpleasant for the patient, if uncontrolled can worsen the overall prognosis, potentially leading to renal impairment, electrolyte disturbances and prolonged hospital stay. There are no data concerning the prevalence of and the relationship between, vomiting and outcome in patients presenting to hospital with acetaminophen poisoning. Therefore, identifying indices of poor prognosis at first presentation after acetaminophen poisoning is key to both improving clinical care and determining targets for intervention.

**Objectives:** We hypothesized that, since vomiting is an important component of the syndrome of severe acetaminophen poisoning, an increase in the number of episodes of vomiting from the time of acetaminophen ingestion to the time the patient was presented at the hospital might indicate more severe acetaminophen poisoning and a poorer prognosis. To present this hypothesis, we carried out this hospital-based study to document the prevalence, clinical characteristics and predictors of vomiting and to investigate the relationship between episodes of vomiting at first hospital presentation and outcomes in acetaminophen poisoning.

**Methods:** This is a retrospective cohort study including patients who attended the emergency department and were admitted within 24 hours of acetaminophen ingestion. The study was conducted over a period of 5 years from 1 January 2004 to 31 December 2008. Parametric and non-parametric tests were used to test differences between groups depending on the normality of the data. SPSS 15 was used for data analysis.

**Results:** Data from 291 patients were included. Vomiting was present in 65.3% of patients with acetaminophen poisoning at the time of first presentation. Multiple logistic regression showed that significant risk factors for vomiting were present among patients who reported an ingested dose of acetaminophen  $\geq 10$  grams ( $p < 0.001$ ) and a latency time of more than 8 hours ( $p = 0.030$ ). Overall, an increasing trend in prothrombin time ( $p = 0.03$ ), serum bilirubin ( $p < 0.001$ ), serum creatinine ( $p = 0.005$ ), serum potassium ( $p < 0.001$ ), length of hospital stay ( $p < 0.001$ ) and the prevalence of patients who had a serum acetaminophen level above a 'possible toxicity' treatment line ( $p = 0.001$ ) were associated with an increased number of episodes of vomiting.

**Conclusions:** Vomiting was common among patients with acetaminophen poisoning. Patients with acetaminophen poisoning commonly experience vomiting in ingested dose of acetaminophen  $\geq 10$  grams and a latency time of more than 8 hours. This study suggests that an increase in episodes of vomiting at first presentation appears to be an important risk marker of subsequent nephrotoxicity and hepatotoxicity.