CLINICAL AND TOXICOLOGICAL ASPECTS ASSOCIATED WITH PARACETAMOL POISONING, AND PREDICTORS OF ITS OUTCOMES

- Clinical pharmacy and Toxicology, Malaysian National Poison Center and attached to School of Pharmaceutical Sciences, Universiti Sains Malaysia (USM), Penang, Malaysia.
- **Poison control and drug information center, Scientific Centers, College of Pharmacy, An-Najah National University/ Nablus / Palestine**

ABSTRACT

Paracetamol is a common source of poisoning, and early identification of patients with more severe poisoning is the key to improving outcomes. Many aspects of paracetamol toxicity and treatment remain poorly understood. To improve knowledge about paracetamol poisoning, the current 5-year, hospital-based study was carried out with the following primary objectives (1) to determine the pattern of paracetamol poisoning among patients who were admitted to Hospital Pulau Pinang (HPP); and (2) to identify indicators of poor prognosis at first hospital presentation for improving clinical care and determining intervention targets for prevention, early detection, diagnosis and treatment. This is an observational retrospective cohort study of hospital admissions for acute paracetamol poisoning between 1 January 2004 and 31 December 2008.

Overall, 305 patients met the inclusion criteria. Gastrointestinal (GI) manifestations were common in patients who reported ingestion of ≥ 8 g of paracetamol, and whose latency was longer than 8 hours; and both of these factors were identified as strong independent predictors of the presence of GI manifestations, especially nausea/vomiting. The presence of GI symptoms was a significant marker of poor outcomes and increased hospital stays. Additionally, hypokalaemia is highly associated with paracetamol poisoning. Specific clinical characteristics upon first presentation to the hospital, such as vomiting, psychiatric illness, and reported paracetamol dose ingested, can be used to identify patients at increased risk for

hypokalaemia. Importantly, long hospital stays were significantly less frequent when IV-NAC therapy was administered within 8 hours of paracetamol ingestion ($p = 0.006$). Adverse Drug Reactions (ADRs) to IV-NAC therapy are common in paracetamol poisoning patients, but are mostly minor and easily managed; no fatalities were observed. Low serum paracetamol concentrations are significantly associated with flushing ($p < 0.001$), rash ($p < 0.001$) and pruritus ($p < 0.001$). Furthermore, delayed NAC infusions were significantly associated with cutaneous anaphylactoid reactions, when compared to patients without this type of ADR ($p < 0.001$). Finally, most paracetamol deliberate self-poisoning (DSP) patients suffer from different life stressors and psychiatric illnesses, which may be associated with varying degrees of suicidal intentions. Alcohol problems were the only life stressor category which was significantly different between genders. Moreover, in the current study, male DSP patients ingested higher amounts of paracetamol, and therefore male patients might be at a higher risk.

In conclusion, this is the first study of its kind to evaluate the relationship between the clinical characteristics of paracetamol poisoned patients upon hospital admission, and during hospitalization. Knowledge of clinical characteristic and their relation to outcome might contribute to reduced complication rates by improving clinical care and determining targets for intervention. The results from this study will allow physicians or clinical toxicologists to identify patients who are at increased risk of paracetamol toxicity and the probability of subsequent hepatotoxicity so as to initiate treatment.