

Acute human self-poisoning with imidacloprid compound: A neonicotinoid insecticide

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Objective: To report large case series of acute self poisoning with imidacloprid, a systemic chloro-nicotinyl insecticide that inhibits nicotinic neuronal pathways that are more abundant in insects than in warm-blooded animals. **Background:** The neonicotinoids, the newest major class of insecticides, have very high potency and systemic actions for crop protection against piercing-sucking pests (1). The acute human toxicity is limited to few case series so far (2-5). **Case series:** Demographic and clinical data were collected as part of a multi-center observational cohort study setup up in 5 hospitals of Sri Lanka. Blood samples were collected for measurement of pesticide level. We report clinical data on 61 patients with imidacloprid self-poisoning seen prospectively in Sri Lanka; data from 8 patients were used for pharmacokinetics of imidacloprid. Another 7 patients were admitted during this period to the medical ward with the history of occupational poisoning with imidacloprid and they were discharged well within 24 hours of admission. In 26 patients the amount ingested was unknown; median amount ingested in 35 patients was 15 ml (Inter quartile range (IQR) 10-50) and the median time of presenting to study hospital since ingestion was 240 minutes (IQR 135-360). The median GCS on presentation was 15 (IQR 10-15). Due to logistic issues we were able to analyze plasma samples from only 38 patients; 9 patients were categorized as non-significant ingestions (LOQ<8 ng/ml) and 29 patients were identified as significant poisoning with imidacloprid (median 9860 ng/ml, IQR 505 ng/ml-18275 ng/ml). Most of the patients remained asymptomatic until discharge; five patients became symptomatic with nicotinic features. Four patients (6.6%) develop respiratory arrest (95% CI 2.1-15.1) and were mechanically ventilated. Of four patients who develop respiratory arrest, three patients had taken an additional poison; namely quinalfos (2 patients) and fenthion (1 patient) with imidacloprid. Among 5 symptomatic patients who have ingested quinalfos as a co-ingestant, 2 patients died after long stay in ICU care. Over all case fatality rate for imidacloprid ingestion without any co-ingestant is 0% (95% CI 0-5.03%). **Conclusions:** Imidacloprid pesticide is generally low toxic to human causing mild symptoms such as vomiting, abdominal pain, headache and diarrhea. However co-ingestions with especially organophosphate may be more hazardous than imidacloprid ingestion alone. **References:** 1. Imidacloprid (JMPR Evaluations 2001 part II Toxicological) 2. Proenca P. Two fetal intoxication cases with imidacloprid: LC/MS analysis; Forensic science international 153 (2005): 75-80. 3. I.- W.Wu, J.-L.Lin, E.-T.Cheng, Acute poisoning with the neonicotinoid insecticide imidacloprid in N-methyl pyrrolidone; Clinical Toxicology 39 (2001): 617-621 4. Huang NC, Lin SL, Chou CH, Hung YM, Chung HM,

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