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Acute Toxicity of Acetochlor Herbicide Ingestion

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Abstract

Background: Acetochlor is a member of chloroacetanilide herbicides. The chemical structure of acetochlor is similar to alachlor and butachlor. Acute toxicity studies with alachlor and butachlor have been reported, whereas the information of acetochlor poisoning is limited.

Objective: To characterize the clinical presentation and outcomes of human exposure to acetochlor herbicide.

Methods: We retrospectively analyzed data from 1 January 2009 through 30 June 2014. Patients exposed to products of acetochlor were consulted to Ramathibodi Poison Center.

Results: Acetochlor herbicides in Thailand come as 50 percent emulsifiable concentrates. There were 55 patients following oral exposure to acetochlor. The most common exposure was intentional ingestion (90.9%). The medical outcomes were as follow: no effect (20.0%), minor effect (76.4%) and death (3.6%), though there were no moderate and major effects cases. Symptoms of minor poisoning patients were drowsiness, agitation, weakness, dizziness, headache, gastrointestinal irritation, nausea, vomiting, abdominal pain, diarrhea, hypersecretion, sweating, muscle twitching, tachycardia, hyperthermia and hypokalemia. The median hospital stay of the minor group was 2 days. There were two mortality cases (3.6%) in which the time to death was detected within 24 hours after exposure. A 63-year old female and 54-year old male ingested unknown amounts of acetochlor and 300 ml, respectively. They were in good consciousness and was had nausea, vomiting and oral mucosa irritation on arrival at the hospital within 1 hour. Her blood chemistry showed hypokalemia (serum potassium 2.7 mmol/L) and creatinine rising (3.3 mg/dL). Despite symptomatic and supportive care, the patient died of cardiac arrest 17 hours post-ingestion. In the other case, his mental status changed to drowsiness, later presented mild muscle twitching and his serum potassium was 3.2 mmol/L and had symptomatic and supportive treatment. However, the patient had cardiac arrest within 8 hours.

Conclusions: Most cases of acetochlor toxicity were mild. However, cases of death were found. Coma cases may be due to large amount of the poison ingestion.