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## A 6-Year Retrospective Study of Patients with Cyanogenic Glycoside Poisoning: Clinical characteristics and Outcomes

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Aim and objectives: Cyanogenic glycoside-containing plants can cause fatal cyanide poisoning but they still have limited evidence of treatment and outcomes, especially in Thailand. This study aimed to describe the clinical characteristics, treatments, and outcomes of cyanogenic glycoside poisoning.

Methodology: A retrospective study was performed by reviewing cases with a final diagnosis of cyanide poisoning and no co-ingestion with other substances. Data were retrieved from the Ramathibodi Poison Center Toxic Exposure Surveillance System database between January 2017 and December 2022. Study outcomes were clinical characteristics, treatments, and outcomes both human and animal. Descriptive statistical analysis was used.

Results: Seventy-one human patients and one elephant were included. In humans, median age was 29 (interquartile range [IQR], 4.5 and 59, range, 1.8 and 82) years. Most of them were female (53.5%), had no co-morbidity (90.1%), had unintentional food exposure (90.1%), and lived in the Northeast region of Thailand (49.3%). Median duration between exposure and symptoms occurred was 4 (IQR, 2 and 6, range, 0.2 and 24) hours. Offending plants were cassava (87.3%), rubber tree (4.2%), *Lasia spinosa* (2.8%), almond (2.8%), cherry (1.4%), and hydrangea (1.4%). Nausea (84.5%), vomiting (78.9%), altered mental status (29.6%), abdominal pain (19.7%), dyspnea (16.9%), seizure (7%), hypotension (7%), and cardiac arrest (1.4%) presented in the patients upon hospital arrival. Blood cyanide levels were not available. Twelve patients (16.9%) experienced severe effects, and one died (1.4%). Ninety-three percents received symptomatic treatment. Ten patients



(14.1%) were given only sodium thiosulfate. Also, nine patients (12.7%) were given sodium thiosulfate and sodium nitrite. None of the patients was given only sodium nitrite alone. Only one patient who received sodium nitrite and sodium thiosulfate died (1.4%). An elephant was poisoned by unintentional cassava ingestion. Although a first suboptimal dose of 25% sodium thiosulfate was already given due to the limited stockpile, it could not save its life.

Conclusions: Mortality of cyanide poisoning from cyanogenic glycoside-containing plants, mainly from cassava, was relatively low. The onset of symptoms ran from minutes to within one day and presented mainly with gastrointestinal symptoms. Sodium thiosulfate alone had been demonstrated to be effective in rescuing those patients.