

Oral Abstracts

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CARDIOACTIVE STEROIDS RELATED POISONING IN TAIWAN

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Background: Cardioactive steroids are steroid molecules with pharmacological and toxicological effects on cardiac tissue. Most cardioactive steroids from plants and pharmaceutical digoxin are cardenolides, whereas those derived from Bufo toads (bufotoxins) are bufadienolides. Non-pharmaceutical cardioactive steroids have been used as therapeutic agents, herbal tonic and aphrodisiac in some parts of the world. The effects of these toxicants can range from minor to severe toxicity or even death. However, reports of poisoning related to these agents remain limited and little is known about the predictors of severity following cardioactive steroid poisoning.

Methods: We conducted a retrospective analysis of all non-pharmaceutical cardioactive steroid exposures reported to the Taiwan National Poison Control Center between 1987 and 2014 to better understand the toxicity profile and factors associated with severe cardioactive steroid poisoning.

Results: A total of 71 patients were eligible for final analysis. Bufo toads or Chan Su were involved in 40 patients, whereas plants (e.g. Nerium, Thevetia and digitalis species) related poisoning were found in 31 patients. Mistaking cardioactive steroids for various therapeutic purposes was the most common reason of exposure. Eleven patients died after cardioactive steroid poisoning, including 10 patients who ingested parts of Bufo toads or Chan Su and one patient who ingested digitalis. Hyperkalemia (initial serum potassium level ≥ 5.1 mmol/L selected by using ROC curve; OR 12.9, 95% CI 2.3-7.28; $p = 0.004$) and the initial presentation of irregular heartbeat/ palpitation (OR 21.0, 95% CI 1.7-266.3, $p = 0.02$) were independent predictors of fatality in the final multivariate logistic regression model; whereas poisoning by Bufo toads or Chan Su poisoning was also associated with the risk of fatality, albeit of borderline statistical significance only (OR 14.6, 95% CI 0.7-291.4; $p = 0.08$).

Conclusions: Non-pharmaceutical source of cardioactive steroid poisoning is uncommon in Taiwan. Clinical features of such poisonings are similar to pharmaceutical digoxin poisonings. However, poisoning by bufotoxins seems to be more frequently associated with fatal effects as compared to poisoning related to plant cardenolides. Hyperkalemia and the presence of irregular heartbeat/ palpitation also predict a poor outcome in such poisonings.

Learning Objectives:

1. To understand the pattern and outcome of cardioactive steroid related poisoning in Taiwan
2. To appreciate the potential differences in toxicity between cardenolides and bufadienolides
3. To understand the predictors of fatality of cardioactive steroid related poisoning

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Results: A total of 71 patients were eligible for final analysis. Bufo toads or Chan Su were involved in 40 patients, whereas plants (e.g. Nerium, Thevetia and digitalis species) related poisoning were found in 31 patients. Mistaking cardioactive steroids for various therapeutic purposes was the most common reason of exposure. Eleven patients died after cardioactive steroid poisoning, including 10 patients who ingested parts of Bufo toads or Chan Su and one patient who ingested digitalis. Hyperkalemia

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