

Drug & Poison News

MICA (P) 183/04/2006

Issue #1, May 2006

Antidotes for a drug overdose

Written by Jasmine Ong.

**This is an actual case from our records.*

The case: A 55-year-old female patient claimed to have taken a 'handful' of her own pills about 2 hours ago. Her vital signs are stable, but she feels very drowsy and is struggling to keep awake. Her regular medication consists of diazepam and amitriptyline. Should I give her flumazenil (Anexate®) to keep her awake?

Our reply: Flumazenil is a competitive benzodiazepine (BZ) antagonist that is generally used to reverse BZ-induced conscious sedation following a medical procedure e.g. endoscopy.

However, controversy exists over its use to reverse CNS depression associated with *intentional* BZ overdoses. Serious complications such as seizures, dysrhythmias, and BZ-withdrawal have occurred when flumazenil was used in patients who were chronic BZ users, or when BZ was co-ingested with other drugs that can precipitate seizures e.g. tricyclic antidepressants (TCA)¹.

In such situations, the effect of the BZ can actually be protective and reversing this effect can lead to active seizures.

Failure to control active seizures can be dangerous especially if the patient has also taken a TCA. Seizures can lead to severe systemic acidosis, further increasing the toxic effect of TCAs¹.

In most overdose cases seen at emergency departments, where the history of ingestion is unclear or unknown, the routine use of flumazenil is contraindicated. Flumazenil is only indicated for the reversal of significant respiratory depression².

In such overdose cases, flumazenil should be administered. As the half-life of flumazenil is shorter than most of the benzodiazepines, re-sedation may occur. Repeated doses may be required, with constant monitoring³. Flumazenil should not be used as a continuous infusion unless respiratory depression is present.



Bibliography:

1. Gussow L. Sedative-hypnotics. In: Ling LJ, Clark RF, Erickson TB, Trestrail JH eds. Toxicology Secrets: Psychopharmacologic Medications. Philadelphia: Hanly & Belfus Inc, 2001: 109-111.
2. Mullen WH. Flumazenil. In: Olson KR ed. Poisoning & Drug Overdose 4th edition: Therapeutic Drugs & Antidotes. San Francisco: McGraw-Hill Companies, 2004: 446-447.
3. Seger DL. Flumazenil – treatment or toxin. J Toxicol Clin Toxicol 2004. 42(2): 209-16

Another useful reference is the **MOH Clinical Practice Guideline on Drug Overdose and Poisoning**. It is accessible at <http://www.moh.gov.sg/cmaweb/attachments/publication/management.pdf>

Who We Are



The 24-hour Drug & Poison Information Centre (DPIC) in Singapore was set up in April 2004 by the Department of Emergency Medicine at the Singapore General Hospital; we are funded by the Ministry of Health's Health Service Development Program.

The main objective of the DPIC is to provide accessible high quality drug and poison emergency treatment advice in a timely manner, and to serve as the primary resource for poison education, prevention and treatment advisory in Singapore. We seek to promote the safe and efficacious use of medicines in Singapore. This service is provided island wide around the clock via our telephone hotline **6423 9119**.

The DPIC provides information to healthcare professionals (e.g. doctors, dentists, pharmacists and nurses), industries (e.g. chemical and pharmaceutical), and members of the public. The DPIC is staffed by pharmacists and toxicologists. We have a wide range of resources, well equipped to handle your information needs.

*Standing, from left : Shyamala Nara (Principal Clinical Pharmacist), Jasmine Ong (Pharmacist), Dr R Ponampalam (Director, DPIC), Loh Chin Siew (Pharmacist), Caroline Tee (Pharmacist).
Absent : Dr Ng Kee Chong (KKWCH), Dr Gregory Cham (TTSH), A/Prof Suresh Pillai (NUH).*

the Toxicologist says ... Dr R Ponampalam, SGH

"All things are poison and nothing is without poison. It is the dose that makes a thing poisonous." Paracelsus, 1590 A.D

At first glance, it is quite difficult to appreciate that potential toxins surround us, as this 16th Century statement implies. However, on closer examination, we realise that even water and oxygen, the essential requirements for life, can result in water intoxication and oxygen toxicity respectively if taken in large doses. The science of poisons, known as toxicology, has its roots in ancient times; however it was not until the 19th Century when this science blossomed. The extent of problems with health hazards from chemicals and drugs led to the development of poison information centers worldwide.

I take this opportunity to invite you to utilise the DPIC to help you manage your patients, and to reduce the burden of chemical health hazards. The DPIC's range of services include:

Drug information

- Patient-specific dosing information
- Patient-specific choice of drug therapy
- Monitoring parameters for drug therapy
- Pharmacotherapy issues in paediatrics & geriatrics
- Dose adjustments in patients with impaired renal or hepatic function
- Drug safety in pregnancy & breast-feeding
- Side effects and adverse reactions of drugs, traditional medicine and health supplements
- Drug interactions with other drugs, food and traditional medicine
- Drug identification (including foreign medicines)
- Parenteral drug compatibilities & admixtures
- Storage & stability issues

Poison information

- Advice on detailed medical management of poisonings
- First aid advice on management of toxic exposures by known or unknown agents
- Identifying signs and symptoms of toxic exposures to specific poisons:
 - 1) Overdoses with medications
 - 2) Exposure to household chemicals & cosmetics
 - 3) Herbals, traditional medicines & dietary supplements
 - 4) Industrial chemicals exposures
 - 5) Bites and stings from venomous creatures
 - 6) Toxic plants
- Poison prevention information (lectures + materials)



Did you know?

There are a variety of products commonly found in the home that are nontoxic, or have low toxicity after accidental exposures. While the ingestion of such products does not usually produce symptoms, the taste or texture may cause stomach upsets. These symptoms are usually mild and will go away. The victim can be given water, juice or milk to dilute and to reduce the taste of the product. Other products may create a foreign-body effect or a choking hazard, in which case a doctor should be consulted immediately.

Examples of minimally toxic products (in small to moderate amounts)

- Cosmetics: Lipstick, lip balm, makeup, mascara
- Bathroom items: Bubble bath soaps, non-medicated shampoo, shaving cream, toothpaste
- Others: Ballpoint pen inks, erasers, calamine lotion, crayons, silica gel beads, glowsticks



Statistics at a Glance

Over the 2-year period since our launch, the DPIC has received more 800 calls on poisoning and more than 10 000 drug information queries. This is how we have helped you :

Poisoning

- 82% of our callers are doctors
 - 96% answered immediately or within 15min
 - 75% of non-hospital calls resulted in avoidance of an ED visit
- The most common agents were :

- Analgesics (154 cases)
- Antidepressants & sedatives (131 cases)
- Bites & Stings (100 cases)

Drug Information

- 66% of our callers are doctors (of whom 80% are MOs or consultants)
 - 90% answered immediately or within 15min
- The most common queries were :

- Dosage and dose adjustment (17%)
- Identification (13%)
- Drug safety (12%)

Coming events

- + **Feb 2006 - Jan 2007**
HAZMAT Medical Life Support Programme – Basic Provider Courses
- + **May 2006**
DPIC's 2nd birthday
- + **July 2006**
Public Forum on Poisoning and Adverse Drug Reactions
- + **Nov 2006**
General Practitioners Seminar on Toxicology and Emergency Medicine (together with SGH Department of Emergency Medicine)

For more details on these events, please visit our website.