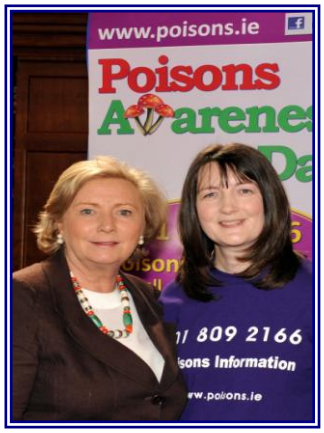
POISONS © INFORMATION CENTRE OF IRELAND

NEWSLETTER

Summer 2012



On Friday April 20th, the Poisons Information Centre hosted its inaugural national **Poison Awareness Day**. The main focus of the day was to highlight the dangers of poisons in the home, particularly to young children. An activity pack for pre-school children was created in collaboration with Early Childhood Ireland. It will be used in a school setting to teach children that some things are not safe to eat so they should always check with an adult. The pack was launched by Minister for Children, Frances Fitzgerald and our very own Nicola Cassidy (Poisons Information Specialist) who designed the activity pack. Other activities on the day helped to raise awareness of poisons and to promote our Public Poisons Information Line (01- 809 2166). This line is available to members of the public from 8am -10pm seven days a week. Healthcare professionals can still avail of a full 24 hour service on 01-809 2566 or 01- 837 9964.

HAVE YOU HEARD OF……..?

MDPV - *methylenedioxypyrovalerone*

MDPV is one of the drugs of abuse known as "Bath Salts". It is a cathinone derivative that inhibits reuptake of dopamine and serotonin. Users say it is highly addictive and causes compulsive re-dosing. A recent cluster of cases in the UK involved 7 patients who presented with agitation, bruxism and marked athetotic movements after taking MDPV at a party. Two patients had raised CK (7600; 1600) and most had a raised white cell count. Other symptoms included tachycardia and dilated pupils. There are also reports of severe psychosis, paranoia, violent behavior, prolonged panic attacks, hallucinations, anhedonia, depression, and lethargy.

The half-life of MDPV appears to be quite short and treatment is mainly supportive. High doses of benzodiazepines may be required to treat sympathetic overstimulation and seizure activity.

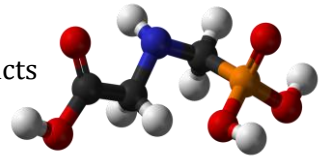
PMA -*paramethyoxyamfetamine*

Also known as "pink ecstasy" this drug of abuse has been available since the 1970s but has seen a recent resurgence in use. It has been associated with a number of deaths over the years, many of which were due to severe hyperthermia.

PMA is an analogue of amphetamine and it causes similar central stimulant effects. It is more potent than MDMA but the onset of action is slower. This can lead to repeated dosing in inexperienced users who feel there is no initial effect.

Aswell as hyperthermia, PMA can cause seizure activity and ECG changes. It also appears to have a more potent serotonergic action than MDMA so serotonin syndrome may occur. Severe agitation can make treatment difficult so benzodiazepines are often required. Dantrolene may be useful for hyperthermia.

Focus on: GLYPHOSATE HERBICIDE



Glyphosate is a non-selective herbicide sold for both agricultural and domestic use.
The toxicity of different preparations varies depending on the constituents. Products containing the salt ***glyphosate trimesium*** appear to be more toxic and cause rapid deterioration (within 1 hr). All cases involving ingestion of this salt should be treated as potentially serious.

Many commercial preparations contain a surfactant called ***polyethyleneamine.*** This surfactant is thought to cause many of the serious toxic features that were traditionally associated with large glyphosate ingestions.

A list of products that contain this ***polyethyleneamine or glyposate trimesium*** can be found at the bottom of the "GLYPHOSATE" entry on Toxbase®.

Glyphosate herbicides *with* surfactant

Symptoms

-There is usually local irritation with a burning sensation in the mouth and back of the throat.

-There may also be severe corrosive effects including oedema, gastric erosion, necrosis and gastrointestinal haemorrhage.

-Gastrointestinal upset such as nausea, vomiting, diarrhoea and abdominal pain can occur.

-There may be tachypnea, hypoxia, and acute lung injury.

-Systemic effects can include drowsiness, hypotension, oliguria/anuria, and metabolic acidosis.

There may be shock and dysrhythmias in severe cases.

Treatment

- Observe all patients until at least 4 hours post-ingestion.
- Consider early endoscopy in severe cases to assess the degree of corrosive damage.
-Replace fluids and electrolytes as required.
-Monitor blood pressure and correct hypotension with fluids or inotropes as required.
-Monitor arterial blood gases and correct acidosis with sodium bicarbonate.
-Monitor renal function and treat failure conventionally.
-Haemodialysis has been associated with enhanced clearance of glyphosate and may be useful in severe cases.

Glyphosate herbicides *without* surfactant

These products may cause mild irritation to mucous membranes. Oral mucosal ulceration has been reported in a small number of cases. Hypersalivation, nausea, vomiting and diarrhoea can occur, hypotension has been reported following large ingestions.

Patients who have taken these products should be observed for a minimum of 4 hours. Symptomatic patients should be treated supportively with fluid replacement and inotropes if necessary.

TEA-TIME!

One of our common enquiries involves accidental ingestion of diluted kettle descaler when people use water from the kettle without washing out the descaler.

Some people experience a tingling or mild burning sensation in the mouth but in most cases significant corrosive damage is not expected. Many descalers contain a mild acid such as citric acid which is unlikely to cause any adverse effects if small amounts are taken. A few descalers however may contain formic acid which is a stronger acid that can potentially cause local corrosive damage. Ingestion of undiluted formic acid should be regarded as potentially serious and patients who are complaining of pain should be assessed for local tissue injury. Otherwise, if the patient can tolerate oral fluids, milk or water should be sufficient to wash out the mouth.

PARACETAMOL- staggered overdose

Case Example: A 3 year old child has been unwell with fever and a throat infection for the past few days. He has been refusing food but will take oral fluids. His parents have been administering 10mls of Calpol Infant suspension every 4 hours for the past 2 days plus an additional 10mLs given during the night. He weighs 14kg.

What is a toxic amount?

- A toxic amount is **>75mg/kg** in ***high risk*** patients, ie:
  - malnourished or suffering from chronic illness (eg. patients not eating for a few days; history of alcoholism; chronic eating disorder; cystic fibrosis; hepatitis C)
  - liver injury due to alcohol abuse, or induced hepatic enzymes due to long-term treatment with liver enzyme inducing drugs such as carbamazepine, phenytoin
- A toxic amount is **>150mg/kg** in patients who are normal risk.

Does he require treatment with n-acetylcysteine?

1) This is a staggered overdose so a plasma paracetamol level can **not** be used to determine whether antidotal treatment is needed. Plasma paracetamol levels in these cases can only confirm ingestion.

2) Calculate the maximum amount of paracetamol (mg/kg) taken **over a 24 hour period:**

Ans: (10 mls x 4) *plus* 10mls last night = 50mLs.

ie. 1200 mg of paracetamol = **85mg/kg**

3) This is a toxic amount in high risk patients; he has not been eating properly for the past few days.

Give a full course of n-acetylcysteine (*Parvolex)*.

Check LFTs, INR and creatinine.

NOTE: Patients who present more than 24 hours after their last dose of paracetamol should have their transaminases and INR checked. If they are normal, no treatment is required.

ETHYLENE GLYCOL

Ethylene glycol is a common ingredient in many commercial antifreezes, brake fluids, and coolant fluids. Following ingestion, ethylene glycol is oxidized to glycoaldehyde, glycolic acid, glyoxylic acid, and oxalate. These toxic metabolites can cause metabolic acidosis and acute renal failure. CNS features including coma and convulsions may also occur. Early antidotal treatment with either Fomepizole or IV Ethanol interferes with metabolism and delays the formation of toxic metabolites.

Ethylene glycol concentrations can aid diagnosis but ***antidotal treatment should not be delayed while waiting for results***. Arterial blood gases, U&E's, FBC, and LFTs should also be checked.

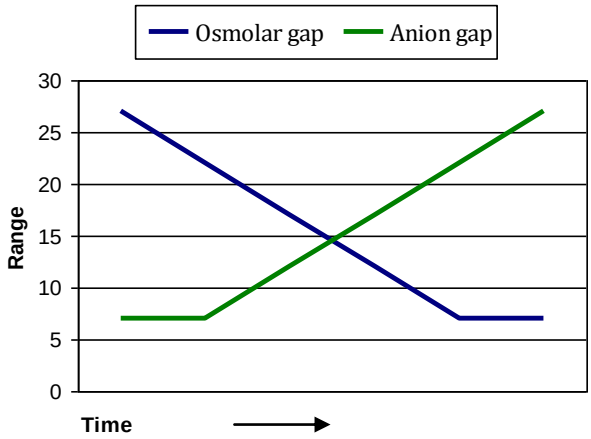
The osmolar gap and anion gap can help to determine the need for treatment and should be calculated in all patients who are suspected of ethylene glycol poisoning.

Osmolar gap: measured OG – calculated* OG (*ie (2 x Na) + [K] + [glucose mmol/L] + [urea mmol/l]

Anion gap: (Na + K) – (Cl +HCO)

Timing will affect the results-

- In the early stages of poisoning, the presence of ethylene glycol molecules will cause an **elevated osmolar gap**.
- In later stages of poisoning, as ethylene glycol is metabolized to toxic acids, the osmolar gap will decrease and is replaced by an acidosis with a **high anion gap**.



Antidotal treatment with Fomepizole (or IV Ethanol) should be given if there is an elevated osmolar gap (>10mosmol/kg) or a high anion gap metabolic acidosis. The antidote should be continued until the ethylene glycol level falls to below 50mg/L.

The average half-life of ethylene glycol is extended to > 12 hours in patients receiving an antidote. Haemodialysis is effective in removing unmetabolized ethylene glycol and may be useful to shorten the duration of treatment in patients with high ethylene glycol levels.

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Contributors:
Elaine Donohoe (Specialist in Poisons Information), Dr Edel Duggan (Clinical Director), National Poisons Information Centre, Beaumont Hospital, Dublin 9, Tel: (01) 837 9964 / 809 2566. Fax: (01) 836 8476.