



Potions and Peril

An accidental overdose of IV Perfalgan in a Neonate



Guido Ferreira, MBChB, DA(SA), DipEC(SA)¹

Chantal Rajah, FCA²

1. Registrar in the department of Anaesthetics, Nelson R. Mandela school of Medicine, University of KwaZulu-Natal, Durban, South Africa
2. Perioperative Research group, Department of Anesthetics, Grey's Hospital, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal, Pietermaritzburg, South Africa

A Case Report:

“10 fold drug error “ of IV Perfalgan in a 34 week premature neonate

Planned to infuse 7.5mg/kg instead infused 75mg/kg

The infusion was stopped just before the end when the error was noted
NAC (N-acetyl-cysteine) was started immediately. Paracetamol levels were taken at 3 hours and 16 hours respectively.

NAC was continued for 21 hours.

Paracetamol levels remained below the treatment line. INR and transaminases remained normal

Paracetamol:

The license for IV paracetamol has recently been extended to include term neonates and infants aged 1 year.

Uniform Doses across this age: 7.5mg/kg with a total daily dose of 30mg/kg/day

It is still used off label in Prens

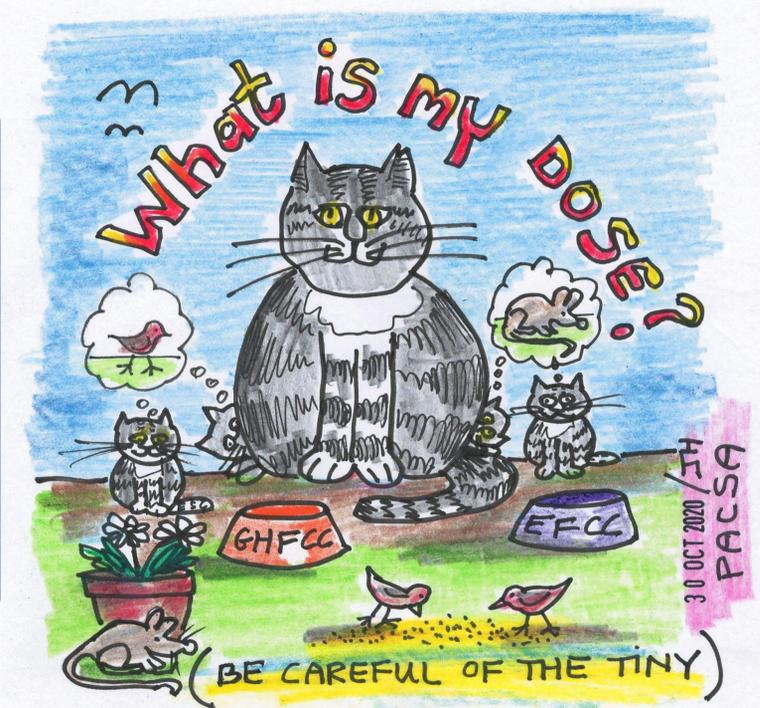
Paracetamol Toxicity:

Paracetamol is a dose dependant hepatotoxin.
Excessive amounts may lead to acute liver failure.

This is generated by NAPQI (N-acetyl-p-benzoquinone) through the CYP450 enzymes.

Hepatotoxicity is dependant on

- The formation rate of NAPQI
- The elimination rate of sulphation and glucuronidation conjugation pathways'
- Initial content and repletion rate of glutathione



The approach to OD in IV paracetamol in neonates is based largely on case reports and expert opinion and is controversial

Toxic doses range from 60mg/kg to 150mg/kg. the mainstay of therapy is NAC and appears to be safe in Neonates. The use of adult Normograms for treatment decisions remains controversial

Infants appear to be more resistant to paracetamol-induced hepatotoxicity because of:

- Reduced rates of oxidation by CYP450
- Neonates ability to replete glutathione compared to adults

Drug Errors

A prospective study at three tertiary hospitals over a 6 month period found that: The combined incidence (drug errors and near misses) was 1:274 cases. One and a half cases per week

Neither the experience of the anaesthetist nor emergency surgery influenced if an error occurred. Errors were most common during the maintenance phase.

The most common drug errors were those of substitution. With exception to paediatric hospital where drug errors occurred as often as errors of substitution.

Correctional interventions:

- Dose of IV perfalgan in mg/kg and mls/kg displayed on the walls. Eg: Therefore for a 10kg child I would give 150mg and 15mls of Paracetamol.
- Re-enforced the use of pre-op assessment sheet that includes drug doses required during the case.
- Re-enforced being Hypervigilant and double checking doses and making sure handwriting is clear and legible with drug labelling
- Case presented in morning meeting with emphasis on drug errors.

Reference: 1: Management of acetaminophen (paracetamol) poisoning in children and adolescents By K Heard. Up to Date

2: Drug administration errors: a prospective survey from three South African teaching hospitals

3: Applied pharmacology in Anaesthesiology and critical care 2nd edition Milner and Welch

4: Illustration By Dr J Handley: Anaesthetic Consultant PMB