Case studies of poisoning at the University Hospital of the West Indies

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Poisoning data

- December 2005 and April 2006
- 31 cases recorded (1 discarded)
  - Males – 7
  - Females – 17
  - Children – 6
- 29 ER evaluations
- 1 call-in
Intentional versus accidental poisoning

- Male: 4 accidental, 4 intentional
- Female: 18 accidental, 8 intentional
- Child: 4 accidental, 4 intentional

Legend:
- accidental
- intentional
Location of Poisoning

- Home, 24
- Work, 1
- Other, 5
Route of Exposure

- Oral
- Skin
- Inhaled
- Other
Clinical Presentation

Clinical features

<table>
<thead>
<tr>
<th>Condition</th>
<th>Clinical features</th>
<th>Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>No effect</td>
<td>8</td>
<td>6</td>
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<tr>
<td>Mild</td>
<td>14</td>
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<tr>
<td>Moderate</td>
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<td>4</td>
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<td>Severe</td>
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<td>1</td>
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<tr>
<td>Agent</td>
<td>Number</td>
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<tr>
<td>----------------------------</td>
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<tr>
<td>Corrosive substance</td>
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<td>Antihypertensive</td>
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<tr>
<td>Hair Product</td>
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<td>Acetaminophen</td>
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<tr>
<td>Alcohol</td>
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<td>Isopropyl alcohol</td>
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<tr>
<td>Ammonia</td>
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<tr>
<td>NSAID</td>
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<tr>
<td>Red Bull**</td>
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<tr>
<td>Powdery substance*</td>
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<tr>
<td>Benzodiazepine</td>
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<tr>
<td>Fluoxetine</td>
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<tr>
<td>OCPs</td>
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<tr>
<td>Apirin</td>
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<tr>
<td>Bleach</td>
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<tr>
<td>Ganja</td>
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<td>Paint thinner</td>
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<td>Rat poison</td>
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<tr>
<td>Shellfish</td>
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<tr>
<td>Automotive paint</td>
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</tbody>
</table>
Co-ingestions

- Red bull + powdery substance – 1
- NSAID + OCP – 1
- NSAID + Alcohol + antihypertensive – 1
- Acetaminophen + aspirin + caffeine - 1
- Fluoxetine + benzodiazepine - 1
Case 1

- 3/2/06, 4:35pm: TC, 26 years old
- HPC: overdosed on 20 Advil tablets
- Time of ingestion unknown
- Vomited twice; drowsy on way to hospital
- PMH: bladder carcinoma, metastatic bone disease, phaeochromocytoma, chemotherapy
Case 1

• Psyche. Hx: 5 previous suicide attempts
• O/E: drowsy, pink mucous membranes, anicteric, afebrile
• Vitals: T=36.2°F; PR 85 beats/min; RR 20 breaths/min; BP 95/53mmHg; O₂ Sat. 99%
• Cardivascular, respiratory, and abdominal examination normal
• CNS: drowsiness
Case 1

• Activated charcoal via NGT
• Normal saline infusion (IV)
• 50mg ranitidine (IV)
• Blood studies: CBC, PT/PTT, U&E’s, LFT’s
• Assessed by psychiatric and internal medicine services
• Transferred to KPH
NSAID toxicity

- > 13 million Americans use them daily
- Inhibition of COX - blockade of prostaglandin production.
- COX-1 - concentrated in platelets, vascular endothelial cells, gastric mucosal cells, and renal collecting tubules.
- COX-2 - the inducible enzyme
  - expressed only in response to certain inflammatory stimuli
NSAID toxicity

• Completely absorbed from the upper small intestine
• Non-ionized in the stomach
  – diffuse readily across the bipolar layer lipid membrane of gastric-lining cells
• Ionised intracellularly (mucosal cells)
• Metabolism by oxidation and glucoronidation in liver
• Excreted in urine
NSAID toxicity

• Benign, rapidly reversible course

• Symptomatic overdose requires ingestion of at least 100 mg/kg

• Mild GI or CNS disturbance that resolves in 24 hours

• Reversible renal dysfunction - after massive acute overdose
NSAID toxicity

- Mild metabolic acidosis,
- Muscle fasciculations, mydriasis,
- Chills, diaphoresis, hyperventilation,
- Mildly elevated systolic blood pressure, hypotension,
- Asymptomatic bradycardia,
- Dyspnea, tinnitus, and rash.
NSAID toxicity

• The management of NSAID overdose is supportive
• Treat hypotension aggressively
• Pyrazolone and fenamate –
  – higher morbidity; managed more aggressively.
NSAID toxicity

• Children with ingestions of less than 100 mg/kg of ibuprofen - no medical evaluation.

• Ingestions > 300 mg/kg
  – GI decontamination, evaluation, and observation.

• Ingestion of 100 to 300 mg/kg
  – children need treatment only if symptoms develop.

• Adults who deliberately overdose on NSAIDs
  – should undergo a period of observation in the ED
  – psychiatric evaluation.
Case 2

- CG, female, 25 years old
- Mother could not arouse her from sleep
- Empty container of Lexotan tablets at bed: 17 missing (3mg tabs.)
- Prescribed Lexotan for depression
- Brought to ER about 1 hour after discovery
Case 2

- PMH: asthma
- O/E: GE satisfactory
- Vitals: T=97.6°F; PR 62/min.; RR 24/min; BP 120/66mmHg; O₂ sat. 98%, RBG 3.4mmol/L
- Respiratory, cardiovascular, and abdominal exams normal
- CNS: very drowsy; GCS 13/15; oriented to person only
Case 2

- Gastric lavage, activated charcoal
- Oxygen via nasal canula
- IV fluids
- Flumazenil 0.5mg IV stat
- Blood studies: all normal
- Pregnancy test negative
- Admitted to the medical ward, discharged 1 day later
Benzodiazepine overdose

• Most common prescription drug used in drug-assisted suicide in USA
• Effects: sedative, hypnotic, anxiolytic and anticonvulsant
• Enhances inhibitory action of GABA
• Rapidly absorbed and readily distributed
• Highly lipophilic – easy penetration of BBB
**Benzodiazepine overdose**

- Metabolised in the liver
- Clinical features (overdose):
  - CNS depression
  - Respiratory depression (large doses)
  - Ataxia common in children
- Testing: urine- oxazepam glucuronide
  - (Clonazepam, lorazepam, midazolam alprazolam)
Benzodiazepine overdose and flumazenil

- Flumazenil, a nonspecific competitive antagonist of the benzodiazepine receptor
- It can quickly confirm a clinical diagnosis
- Reversal of conscious sedation
Benzodiazepine overdose and flumazenil

• Weinbroum et al, Crit Care Med 1996; 24(2):

• 110 patients: 31 in RDB (1mg flumazenil or normal saline)
  – 14/17 FTPs awoke
  – 1/14 NSP
  – Flumazenil is a valuable diagnostic tool;
  – effective in preventing occurrence
  – Respiratory insufficiency is reversed
Benzodiazepine overdose and flumazenil

- NICE guidelines

- The administration of flumazenil should be considered in patients presenting with an overdose of benzodiazepines.

- Should not be used if the patient is benzodiazepine dependent.
Benzodiazepine overdose and flumazenil

• The National Poisons Information Service (Toxbase)
  http://www.spib.axl.co.uk/toxbaseindex.htm.

• Flumazenil should only rarely be required in benzodiazepine overdose
Benzodiazepine overdose and flumazenil

• Indications
  – Isolated benzodiazepine overdose in non-habituated user (e.g., accidental pediatric exposure)
  – Reversal of conscious sedation
Benzodiazepine overdose and flumazenil

Absolute Contraindications

– Known or suspected coingestant that lowers seizure threshold

– Tricyclic antidepressants, cocaine, lithium, methylxanthines, INH, propoxyphene, MAO

– Patient taking benzodiazepine for control of a potentially life-threatening condition (e.g., seizures)

– Concurrent sedative-hypnotic withdrawal
Case 3

- 6 y.o male, OB
- PC: drank ammonia liquid, 6 hrs earlier;
  - burning of the mouth, throat and chest
  - decreased oral intake
  - Wet cough
  - Mouth washed with water
  - No vomiting, abdominal pain, stridor
Case 3

- PMH: asthma
- O/E: respiratory distress, acyanotic, not drooling
- Vitals: T=101.0°F; PR142/min. RR 32/min; O₂ sat. 96%
- RS: Clear lung fields
- CVS,CNS, Abd – normal
- Mouth: erosion on tongue and posterior oro-pharynx; hyperaemia of tonsils
Case 3

- IV fluids
- Blood studies: WBC 13.6
- CXR: normal
- ENT service:
  - Hydrocortisone 50mg IV
  - Rigid oesophagoscopy: ‘slough’ at base of tongue, posterior pharyngeal wall hyperaemia
  - Steroids continued
  - Discharged 1 day later on steroids and antibiotics
  - Clinic F/U: doing well
Caustic ingestions and steroids

- Corticosteroid therapy remains controversial
- Advocated to potentially prevent stricture formation
- Circumferential second-degree burn injuries of the esophagus
- Prednisolone
  - 2 mg/kg/day in children
  - 40 mg tid in adults for 14 to 21 days
Caustic ingestions and steroids

• Prophylaxis with antibiotics that treat oral pathogens and anaerobic bacteria (e.g., ampicillin or clindamycin) should be initiated only if corticosteroid therapy is utilized
Thank you