Massive Paracetamol Overdose: An Observational Study.

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Aims/ Methods

• Describe clinical characteristics and outcomes of “massive” paracetamol overdose.

• **Methods:**
  - Australian Toxicology Monitoring (ATOM) Study – Australian Paracetamol Project (APP):
    - Prospective observational study
    - 5 toxicology units + 2 Poison Centres

• **Inclusion:**
  - Paracetamol ≥40g
  - Ingested over ≤8h
  - Immediate release preparation

• **Paracetamol Ratio [PR]**

  
  \[
  \text{1st paracetamol conc. (> 4h)} \quad \text{nomogram paracetamol conc. at same time}
  \]

\[
\text{Paracetamol Ratio} = \frac{5 \text{ hr concn}}{\text{nomogram concn at 5h}}
\]

\[
= \frac{200 \text{mg/L}}{125 \text{mg/L}} = 1.6
\]
**Results**

**Initial Paracetamol Concentration (4-16h)**

<table>
<thead>
<tr>
<th>Time post ingestion (h)</th>
<th>Nomogram Line</th>
<th>Double Nomogram Line</th>
<th>Triple Nomogram line</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
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**Paracetamol Concentration (mg/L)**

- No Activated charcoal within 8h
- Activated charcoal within 8h

**Results**

- PR significantly lower with charcoal: **1.5** (IQR: 1.1 - 1.8) (n=37) vs **2.2** (IQR: 1.4 - 3.0) (n=97)  \( p = 0.0002 \)
- Same median dose 50g

**IV NAC < 8h of ingestion**

<table>
<thead>
<tr>
<th></th>
<th>Charcoal N= 37</th>
<th>Nil N= 80</th>
<th>Odds Ratio p value</th>
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<tbody>
<tr>
<td>Median Dose Ingested (IQR)</td>
<td>50g (48-63g)</td>
<td>50g (43-50g)</td>
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<tr>
<td>Median PR (range)</td>
<td>1.5 (0.4 – 9.17)</td>
<td>2.0 (0-6.21)</td>
<td><strong>P = 0.002</strong></td>
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<td>Time to NAC (IQR:h)</td>
<td>5.3h (2.7-6.5h)</td>
<td>5.5h (3.8-6.8h)</td>
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<tr>
<td>Peak ALT&gt;50IU/L</td>
<td>1 (3%)</td>
<td>12 (15%)</td>
<td>0.16 (0.02 - 1.3) p=0.10</td>
</tr>
<tr>
<td>Hepatotoxicity ALT&gt;1000IU/L</td>
<td>0 (0%)</td>
<td>6 (7.5%)</td>
<td>0.15 (0.01- 2.79) p=0.21</td>
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Conclusions: Massive Overdose

• Early charcoal resulted in LOWER initial paracetamol concentrations
• Early charcoal less likely to have HEPATOTOXICITY
  • No patient given early charcoal developed hepatotoxicity
  • Not statistically significant due to small numbers
  • Likely due to lower paracetamol concentrations.
• Larger cohort required to demonstrate effect of charcoal on hepatotoxicity and acute liver injury.
Acknowledgments

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