BEST EVIDENCE TOPIC REPORTS

Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary

Edited by K Mackway-Jones

Best evidence topic reports (BETs) summarise the evidence pertaining to particular clinical questions. They are not systematic reviews, but rather contain the best (highest level) evidence that can be practically obtained by busy practising clinicians. The search strategies used to find the best evidence are reported in detail in order to allow clinicians to update searches whenever necessary.

The BETs published below were first reported at the Critical Appraisal Journal Club at the Manchester Royal Infirmary. Each BET has been constructed in the four stages that have been described elsewhere. The four topics covered in this issue are:

- Admission of isolated sternal fractures for observation
- Management of household electrical injury
- Steroid delivery in group
- Haematoma block versus intravenous regional anaesthesia in Colles' fracture

Admission of isolated sternal fracture for observation

Report by Andy Jones, senior registrar
Search checked by Wendy Dollery, senior registrar

Clinical scenario
A 30 year old man presents having been involved in a front end collision while driving a car at 40 mph. He is found to have sternal tenderness and an x ray reveals a fracture. There are no other significant injuries.

Three part question
In an [adult with an isolated sternal fractures following a road traffic accident] is [routine admission] warranted to [detect possible cardiac events].

Search strategy
Medline 1966 to 12/97 using the OVID interface. ((exp accidents traffic OR traffic ti,ab,sh) AND [exp sternum OR sternum. ti,ab,sh] AND [exp fractures OR fractures. ti,ab,sh]) LIMIT to [human AND english language])

Table 1

<table>
<thead>
<tr>
<th>Author, date, and country</th>
<th>Patient group</th>
<th>Study type (level of evidence)</th>
<th>Outcomes</th>
<th>Key results</th>
<th>Study weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brookes et al., 1993, Australia</td>
<td>272 fractures over 6.5 years, 124 isolated fractures, 93% from RTAs</td>
<td>Retrospective view</td>
<td>Accident details, fracture grade, cardiac sequelae</td>
<td>Isolated fracture minimal complications, arrhythmias seen with age &gt; 65, IHD, digoxin</td>
<td>Possible missed fractures, data retrospective</td>
</tr>
<tr>
<td>Hills et al., 1993, Australia</td>
<td>127 fractures over 6.5 years, 89% from RTAs</td>
<td>Prospective cohort study</td>
<td>Associated injuries</td>
<td>No clear association with intrathoracic injury. Slight increase in thoracic spine injury</td>
<td>Data collection uncertain, no uniform cardiac screen</td>
</tr>
<tr>
<td>Bu’Lock et al., 1994, UK</td>
<td>63 patients with central chest trauma, 45 seat belt related</td>
<td>Prospective cohort study</td>
<td>ECG findings and cardiac enzymes, echocardiography</td>
<td>None of these needed treatment and no adverse effects - ECG and enzymes correlated poorly with these findings, 25% of isolated seat belt injuries had pericardial effusion</td>
<td>Small numbers, not all had fractures</td>
</tr>
</tbody>
</table>

Table 1

ECG=electrocardiography; IHD=ischaemic heart disease; RTAs=road traffic accidents.
Management of household electrical injury

Report by Wendy Dollery, senior registrar
Search checked by Katrina Herren, research fellow

Clinical scenario
A 30 year old male electrician attends the emergency department having suffered an electrical shock while servicing a washing machine. There was no water involved.

Three part question
In [patients who have sustained a household voltage electrical injury with normal initial electrocardiography] is [admission for monitoring] necessary to [reduce the risk of sudden death from cardiac arrhythmias]?

Search strategy
Medline 1966 to 12/97 using the OVID interface. [exp electrical injury OR exp burns OR electric injuries. ti,ab,sh] AND [exp monitoring, physiologic or monitoring. ti,ab,sh]

Search outcome
Forty four papers found of which 39 were irrelevant; the remaining papers are shown in table 2.

Table 2

<table>
<thead>
<tr>
<th>Author, date, and country</th>
<th>Patient group</th>
<th>Study type (level of evidence)</th>
<th>Outcomes</th>
<th>Key results</th>
<th>Study weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatovich and Lee, 1991, Australia¹</td>
<td>20 patients exposed to 240 volts AC electric supply</td>
<td>Observational study, literature review</td>
<td>Initial ECG, cardiac monitor</td>
<td>2/20 abnormal, no new abnormality detected</td>
<td>Retrospective, no statistical analysis</td>
</tr>
<tr>
<td>Cunningham, 1991 Australia¹</td>
<td>70 patients exposed to 240 volts AC electric supply</td>
<td>Observational study, survey of management policy</td>
<td>Initial ECG, cardiac monitor</td>
<td>11/59 abnormal, 6 deaths, no new abnormality detected</td>
<td>Retrospective, no statistical analysis</td>
</tr>
<tr>
<td>Bailey et al, 1995, Canada³</td>
<td>151 children (age 8 months to 18 years) exposed to 120 or 240 volts AC electric supply</td>
<td>Observational study</td>
<td>Initial ECG, cardiac monitor</td>
<td>1/113 abnormal, no new abnormality detected</td>
<td>Retrospective, missing data</td>
</tr>
<tr>
<td>Garcia et al, 1995, USA⁴</td>
<td>Patients aged less than 21 years exposed to minor (&lt; 1000 volts) electrical injury</td>
<td>Observational study</td>
<td>Initial ECG, cardiac monitor</td>
<td>2/53 abnormal, no new abnormality detected</td>
<td>Retrospective, missing data</td>
</tr>
<tr>
<td>Wallace et al, 1995, USA⁴</td>
<td>26 children exposed to 120 or 240 volts AC electric supply</td>
<td>Observational study</td>
<td>Initial ECG, cardiac monitor</td>
<td>1/17 abnormal, no new abnormality detected</td>
<td>Retrospective</td>
</tr>
</tbody>
</table>

¹ ECG=electrocardiography.
Towards evidence based emergency medicine: best BETS from the Manchester Royal Infirmary. Admission of isolated sternal fracture for observation.

A Jones

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