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. Each BET is based on a clinical scenario and ends with a clinical bottom line which indicates, in the light of the evidence found, what the reporting clinician would do if faced with the same scenario again. The BETs published below were first reported at the Critical Appraisal Journal Club at the Manchester Royal Infirmary or placed on the BestBETs website. Each BET has been constructed in the four stages that have been described elsewhere. The BETs shown here together with those published previously and those currently under construction can be seen at http://www.bestbets.org. Four BETs are included in this issue of the journal.

- Fasting before prilocaine Biers’ block
- Ultrasound in the diagnosis of testicular torsion
- Primary split skin grafts for pretilial lacerations
- Serial x rays in battery ingestion

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Fasting before prilocaine Biers’ block

Report by Muhammad Ahmad, Consultant in Emergency Medicine

Checked by Gary Saynor, Consultant in Emergency Medicine
doi: 10.1136/emj.2005.027482

Abstract

A short cut review was carried out to establish whether a period of fasting increases the safety of Biers’ block (intravenous regional anaesthesia). A total of 50 papers were found using the reported search, of which four presented the best evidence to answer the clinical question. The author, date and country of publication, patient group studied, study type, relevant outcomes, results, and study weaknesses of these best papers are tabulated. A clinical bottom line is stated.

Clinical scenario

A 75 year old man presents to the emergency department with a wrist injury. X ray reveals a Colles’ fracture with dorsal angulation requiring manipulation. The patient has had lunch one hour before presentation. Your colleague tells you that you should manipulate the fracture before your shift ends in an hour’s time, but a passing anaesthetist says that you should wait at least five hours (six hours after food) before you do anything. The departmental manager points out that this means the patient should be admitted since they will “breach” the target time of four hours if you wait. If the patient is admitted the next available trauma list is in 36 hours. You wonder whether the patient should be fasted for four to six hours or if it is safe to reduce this fracture under Bier’s block without any period of fasting.

Three part question

In [patients with uncomplicated Colles’ fracture] is [fasting before prilocaine Biers’ block] necessary for [the prevention of life threatening complications]?

Search strategy


Search outcome

Overall 50 papers were found, of which 47 were not relevant to the study question. All the references in the relevant papers were searched and two more papers were found. Four papers are included in table 1.

Comment(s)

The evidence found does not address the question directly and is limited to postal surveys. All studies showed that major complications are extremely rare in both groups and, where the question was addressed, there is no evidence of increased rate of complications in patients who were not fasted.
Ultrasound in the diagnosis of testicular torsion

Report by Zain Kapasi, Senior House Officer in Emergency Medicine

Checked by Steve Halliday, Senior House Officer in Emergency Medicine
doi: 10.1136/emi.2005.027490

Abstract

A short cut review was carried out to establish whether colour Doppler ultrasound is more sensitive than clinical examination in ruling out testicular torsion. A total of 284 papers were found using the reported search, of which seven were relevant and of sufficient quality for inclusion (see table 2).

Clinical scenario

A 15 year old boy presents to the emergency department with gradual onset testicular pain which has been present for the last six hours. On examination he has marked tenderness on the left side with normally placed testicles. There is a moderate left sided swelling and mild erythema, and he describes some recent dysuria. You wonder if colour Doppler ultrasound can help you to accurately rule out torsion and thus prevent this boy going for surgery unnecessarily?

Table 1

<table>
<thead>
<tr>
<th>Author, date, and country</th>
<th>Patient group</th>
<th>Study type</th>
<th>Outcomes</th>
<th>Key results</th>
<th>Study weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartholomew K and Sloan JP, 1990, UK</td>
<td>Patients with Colles’ fracture reduced under Biers’ block</td>
<td>Questionnaire survey to 106 emergency departments</td>
<td>Serious complications</td>
<td>No serious or fatal complications</td>
<td></td>
</tr>
<tr>
<td>Lowen R and Taylor J, 1994, Australia</td>
<td>Patients with Colles’ fracture reduced under Biers’ block</td>
<td>Questionnaire survey to 120 emergency departments</td>
<td>Complications</td>
<td>Departments that fast their patients</td>
<td></td>
</tr>
<tr>
<td>Kendall JM et al, 1995, UK</td>
<td>Patients with Colles’ fracture reduced under Biers’ block</td>
<td>Postal survey to 150 emergency departments</td>
<td>Complications</td>
<td>No significant adverse effect</td>
<td></td>
</tr>
<tr>
<td>O’Sullivan I et al, 1996, UK</td>
<td>Patients with Colles’ fracture who were treated under Biers’ block</td>
<td>Questionnaire survey to 282 emergency departments</td>
<td>Complications in fasted and unfasted patients</td>
<td>No difference</td>
<td></td>
</tr>
</tbody>
</table>

- **Clinical Bottom Line**
  
The limited evidence available suggests there is no need to fast patients prior to Biers’ block. Further research is required.

- **Search strategy**
  
Medline: [exp spermatic cord torsion/OR testis adj torsion.mp) OR (exp tests/AND torsion.mp).] AND [exp ultrasonography/OR ultrasonography.mp) AND (exp echography/OR exp Doppler Flowmetry/or exp Doppler Echography/or exp Color Ultrasound Flowmetry/OR ultraso$.mp)]. Limit to Human and English Language. A total of 223 articles found. Embase: [(exp testis/AND testis adj torsion.mp.)) AND [(exp echography/OR exp Doppler Flowmetry/or exp Doppler Echography/or exp Color Ultrasound Flowmetry/OR ultraso$.mp)].] Limit to Human and English Language. A total of 284 papers found. Cochrane Library: [torsion (mesh this term only) AND testis (mesh explode) OR spermatic cord torsion (mesh explode)] AND (ultrasonography (mesh explode)). Four articles found.

**Comment(s)**

Some of the studies that were found are over 10 years old and the technology available for ultrasound has changed considerably since that time. New ultrasound techniques that attempt to identify a twisted cord as opposed to blood flow to the testicle appear promising. The results presented do not suggest that ultrasonography alone can rule out testicular torsion. It may be that it can perform this function in cases with low or even moderate clinical suspicion—but this question has not been addressed.
Primary split skin grafts for pretibial lacerations

Report by Sunil Dasan, Specialist Registrar
Checked by Kambiz Hashemi, Consultant
doi: 10.1136/emj.2005.027508

Abstract
A short cut review was carried out to establish whether primary split skin grafting is better than simple wound edge approximation at reducing time to healing in patients with pretibial flap lacerations. A total of 72 papers were found using the reported search, of which one presented the best evidence to answer the clinical question. The author, date and country of publication, patient group studied, study type, relevant outcomes, results and study weaknesses of this best paper are tabulated. A clinical bottom line is stated.

Clinical scenario
A 69 year old woman has slipped and caught her leg on a chair. She attends your emergency department with a large flap laceration to the anterior aspect of her right leg. She has no other injuries, no other significant past medical history, and has good social support. You want her wound to heal quickly so that she may get back to her normal activities as soon as possible. You wonder whether a primary split skin graft or a simpler procedure using the existing flap would be best to achieve this.

Three part question
In [patients with pretibial flap lacerations] is [a primary skin graft better than simple wound edge approximation] at [reducing the time to healing]?

Search strategy

Search outcome
A total of 72 papers were found of which only one was relevant and of sufficient quality for inclusion (see table 3).

Comment(s)
Earlier studies only compared primary split skin grafting with grafting after failed conservative management or studied conservative management alone. This study shows that primary split skin grafting under local anaesthetic shortens the time to full healing of pretibial flap lacerations by nearly four weeks though a larger prospective randomised controlled trial would be needed to confirm this. Early mobilisation has been shown to be beneficial in the elderly after such a procedure which makes management as an outpatient the preferred option.

Table 2
<table>
<thead>
<tr>
<th>Author, date, and country</th>
<th>Patient group</th>
<th>Study type</th>
<th>Outcomes</th>
<th>Key results</th>
<th>Study weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dewire DM et al, 1992, USA</td>
<td>20 patients separated clinically into 3 groups (trauma, inflammation, ischaemia)</td>
<td>Diagnostic cohort</td>
<td>Correct diagnosis of torsion</td>
<td>Correctly predicted the need for surgery in 89%</td>
<td>Small study numbers Data 12 years old</td>
</tr>
<tr>
<td>Schwaibold H et al, 1996, Germany</td>
<td>31 patients with painful scrotums</td>
<td>Diagnostic cohort</td>
<td>Correct diagnosis of testicular torsion</td>
<td>Definitive diagnosis in 83%</td>
<td>Results from 1988 to 1991</td>
</tr>
<tr>
<td>Hendrikx AJ et al, 1997, Netherlands</td>
<td>215 patients with scrotal complaints</td>
<td>Diagnostic cohort</td>
<td>38% of torsions missed</td>
<td>Clinical examination 7.6%; ultrasound 7.6%</td>
<td>No direct comparison of clinical v ultrasound</td>
</tr>
<tr>
<td>Baker LA et al, 2000, USA</td>
<td>130 patients with equivocal clinical suspicion of torsion</td>
<td>Diagnostic cohort</td>
<td>Correct diagnosis of torsion by ultrasound</td>
<td>Sensitivity 88.9%; specificity 98.8%</td>
<td>No direct comparison of clinical v ultrasound</td>
</tr>
<tr>
<td>Kravchick S et al, 2001, Israel</td>
<td>38 boys with scrotal pain and borderline clinical findings</td>
<td>Diagnostic cohort</td>
<td>Correct diagnosis of torsion</td>
<td>Ultrasound 88.9% sensitive, 90% specific; clinical assessment 47.4% accuracy</td>
<td>No sensitivity or specificity for clinical assessment</td>
</tr>
<tr>
<td>Yuan Z et al, 2001, China</td>
<td>17 pre-op acute scrotums, 17 normal scrotums</td>
<td>Diagnostic cohort</td>
<td>Correct diagnosis of testicular torsion</td>
<td>48% accuracy at torsion pick-up</td>
<td>Small study numbers No direct comparison of clinical v ultrasound</td>
</tr>
<tr>
<td>Stehr M and Boehm R, 2003, Germany</td>
<td>132 children with acute scrotum</td>
<td>Diagnostic cohort</td>
<td>% of torsions reported normal by ultrasound in a group with clinically suspected torsion</td>
<td>3.8%</td>
<td>Indirect comparison of clinical examination and ultrasound</td>
</tr>
</tbody>
</table>

CLINICAL BOTTOM LINE

A primary split skin graft performed under local anaesthetic significantly reduces the healing time for pretibial flap lacerations and can be done successfully as an outpatient procedure.


Serial x rays in battery ingestion

Report by Stewart Teece, Specialist Registrar
Checked by Kevin Mackway-Jones, Professor
doi: 10.1136/emj.2005.027516

Abstract

A short cut review was carried out to establish whether serial x rays were necessary in cases of battery ingestion where the battery has passed through the oesophagus. A total of 104 papers were found using the reported search, of which none presented any evidence to answer the clinical question. It is concluded that there is no evidence available to answer this question. Further research is needed.

Clinical scenario

A mother brings her 3 year old to the department, concerned that she has swallowed a battery. X ray reveals a metallic opacity in the abdomen which could very likely be a battery. You reassure the mother but she is concerned about the passage of the battery and wants to come back for a repeat film. You wonder whether you should perhaps make sure that it’s passing distally to prevent it decaying inside the body.

Three part question

In [children who have swallowed batteries] do [serial abdominal x rays] reduce the [incidence of perforation and need for later intervention]?

Search strategy


Search outcome

Overall 29 papers found, of which none contained any data to answer the question posed.

Comment(s)

A number of authors expressed a personal view that serial x rays were necessary to ensure that the battery had been passed, but none offered any direct evidence for this. Other authors felt that “nature should be allowed to take its course”, but again none offered supporting evidence.

CLINICAL BOTTOM LINE

Some research is required to clarify whether there is a need for serial x rays after battery ingestion. In the mean time local expert advice should be followed.