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 BETs shown here together with those published previously and those currently under construction can be seen at http://www.bestbets.org Six BETs are included in this issue of the journal.

Reimplantation of the nail root in fingertip crush injuries in children

Report by Russell Boyd, Consultant

Checked by Carole Libetta, Consultant

Abstract

A short cut review was carried out to establish whether reimplantation of the nail improved cosmetic outcome after crush injury to the fingertip in children. Altogether 35 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 2 year old child presents to the emergency department with a crush injury to the left index finger tip. The fingernail has been avulsed from the proximal nail fold. You wonder if surgical reimplantation of the nail root into the proximal fold will produce a better cosmetic result.

Three part question

In [children with fingertip injuries to the nail root] does [surgical reimplantation] improve [cosmetic outcome]?

Search strategy

Medline 1966 to 12/01 using the OVID interface. [(exp adolescence OR exp child OR exp child of impaired parents OR exp child, abandoned OR exp child, exceptional OR exp child, hospitalized OR exp child, institutionalized OR exp child, preschool OR exp child, unwanted OR exp disabled children OR exp homeless youth OR exp infant OR exp only child OR child$.mp OR exp pediatrics OR pediatric$.mp OR paediatric$.mp) AND exp finger injuries AND (fingertip.mp OR child$.mp OR exp pediatrics OR pediatric$.mp OR paediatric$.mp) AND exp finger injuries AND (fingertip.mp OR finger tip.mp OR nail$.mp OR nail$.mp OR finger tip.mp OR nail$.mp) AND (exp replantation OR replantation.mp OR reimplantation.mp OR replace$.mp OR repair.mp)] LIMIT to human AND English.

Search outcome

Altogether 35 papers were identified, of which one was deemed relevant for inclusion (table 1).

Comment(s)

The outcome was anecdotally related by the authors to the degree of crush injury to proximal nail fold but no evidence was presented to support this. This is a poor study and more research is needed.

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>O'Shaughnessy M et al, 1990, Ireland</td>
<td>64 fingertip injuries in patients aged 1–81 years 10 with nails v 54 without</td>
<td>Retrospective observational</td>
<td>Cosmetic appearance</td>
<td>No difference</td>
<td>Objective scoring mechanism lacking</td>
</tr>
</tbody>
</table>

www.emjonline.com

Antibiotics in non-venomous snakebite

Report by Polly Terry, Specialist Registrar

Abstract

A short cut review was carried out to establish whether prophylactic antibiotics reduced the incidence of infection after non-venomous snake bite. Altogether 60 papers were found using the reported search, of which two 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 26 year old man attends the emergency department having been bitten on his right hand 30 minutes previously by his pet—a non-venomous snake. Examination reveals localised swelling and oedema of his right hand and forearm, he is systemically well, has no relevant previous medical history and is fully antitetanus immunised. You know there is the potential for infection from the snakes fangs and oropharynx, as well as contamination from the victim’s skin and clothing. You thoroughly clean the wound with local wound toilet, and are happy that there is no fang left in situ. You wonder if prophylactic antibiotics are indicated to reduce the risk of infection.

Three part question

In [fit and well adults who have been bitten by a non-venomous snake] do [prophylactic antibiotics] reduce [the incidence of infection]?

Search strategy


Search outcome

Altogether 60 papers of which two were relevant (table 2).

Comment(s)

While many studies have identified the variety of potential pathogens from snakebite, few have looked at the role of prophylactic antibiotics and those available are of poor quality. It is interesting to note the low incidence of infection associated with snakebites irrespective of antibiotic treatment or not. Given the low event rate for infection, trials involving larger numbers would need to be undertaken.

► CLINICAL BOTTOM LINE

Prophylactic antibiotics are not indicated in the routine treatment of patients with snakebites from non-venomous snakes if no necrosis is present.


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>Weed HG, 1993, USA</td>
<td>72 consecutive children and adults with non-venomous snake wounds calling a poisons centre. None of the patients received antibiotics</td>
<td>Observational</td>
<td>Presence of wound infection</td>
<td>No wound infection identified</td>
<td>14% applied topical antibiotics No definition of wound infection No control group</td>
</tr>
<tr>
<td>Blaylock RS, 1999, South Africa</td>
<td>363 patients presenting with snake bites—both venomous (88%) and non-venomous (12%)</td>
<td>Observational</td>
<td>Presence of wound infection</td>
<td>No infections in patients not given antibiotics</td>
<td>Not randomised Antibiotics given on clinical grounds (presence of necrosis) Very little raw result data provided</td>
</tr>
</tbody>
</table>

Intra-articular lidocaine for acute anterior shoulder dislocation reduction

Report by S R Dhinakaran, Clinical Fellow

Abstract

A short cut review was carried out to establish how intra-articular lidocaine compared with intravenous analgesia and sedation during reduction of anterior shoulder dislocations. Altogether 146 papers were found using the reported search, of which three 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 middle aged man attends the emergency department having sustained an acute primary anterior shoulder dislocation during a fall. It is impossible to obtain peripheral venous access and you are not able to get him to breathe entonox. You are aware that shoulder dislocations can be reduced with intra-articular lidocaine (IAL). You wonder if IAL is as effective as intravenous analgesia and sedation (IVAS).

Three part question

In [patients with acute traumatic anterior shoulder dislocation] is [intra-articular lidocaine as effective as intravenous analgesia and sedation] at [facilitating reduction and easing pain associated with reduction]?

Search strategy

Medline 1966–12/01 using the Ovid interface. [exp shoulder dislocation OR shoulder dislocation.mp] AND [exp anesthesia, intravenous OR exp anesthetics, intravenous OR “intravenous anaesthesia”].mp OR exp analgesia OR exp conscious sedation OR exp diazepam OR exp hypnotics and sedatives OR exp midazolam OR exp sedatives, nonbarbiturate OR sedation.mp OR exp narcotics OR narcotics.mp OR exp morphine OR morphine.mp OR exp meperidine OR meperidine.mp OR exp pethidine OR pethidine.mp OR exp lidocaine OR “lidocaine”.mp OR “lignocaine”.mp OR exp injections, intra-articular OR exp joint diseases OR intra-articular.mp OR exp anesthetics OR exp local anesthetics.mp] AND maximally sensitive RCT filter. LIMIT to human AND English.

Search outcome

Altogether 146 papers were found, of which three were relevant (table 3).

Comment(s)

All studies were small and therefore underpowered. Larger studies are therefore needed.
Propofol for resistant status epilepticus

Report by Simon Carley, Specialist Registrar

A short cut review was carried out to establish whether propofol is effective at stopping fitting in resistant status epilepticus. Altogether 24 papers were found using the reported search, of which six 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 20 year old man presents to the emergency department in status epilepticus. Initial treatment with benzodiazepines and phenytoin is unsuccessful. He is intubated and ventilated using thiopentone and suxamethonium. Ten minutes later he starts to fit again. The anaesthetist suggests that propofol may help but you have heard that propofol can increase EEG activity. You wonder whether this is an appropriate drug to use.

Three part question
Is [patients in resistant status epilepticus] effective at [reducing seizure activity]?

Search strategy

Search outcome
Altogether 24 papers of which six included data on patients relevant to the clinical question (table 4).

<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>Mackenzie SJ et al 1990</td>
<td>2 patients with RSE. Standard treatment unsuccessful</td>
<td>Case series</td>
<td>Observation of seizure activity</td>
<td>Propofol stopped seizure activity clinically and on EEG</td>
<td>Case series</td>
</tr>
<tr>
<td>Companini R et al 1991</td>
<td>4 patients on ICU with RSE</td>
<td>Case series</td>
<td>Observation of seizure activity</td>
<td>Propofol infusion stopped apparent seizure activity</td>
<td>Case series</td>
</tr>
<tr>
<td>Bergaat A et al 1994</td>
<td>Adult OD patient. Propofol was given to suppress EEG activity</td>
<td>Case report</td>
<td>Observation of EEG activity</td>
<td>Propofol appeared to suppress EEG seizure activity</td>
<td>Case report</td>
</tr>
<tr>
<td>Kuisma M and Roini RO 1995</td>
<td>8 adult patients in prehospital care with RSE. All patients were intubated and ventilated. All received propofol boluses of 100–200 mg.</td>
<td>Case series</td>
<td>Success at terminating seizures</td>
<td>All patients stopped RSE with propofol</td>
<td>Case series. Not clear if patients intubated before or after propofol usage. This could be a result of the use of propofol.</td>
</tr>
<tr>
<td>Harrison AM et al 1998 USA</td>
<td>12/12 child with hereditary fructose intolerance in RSE</td>
<td>Case report</td>
<td>Observation</td>
<td>RSE stopped on infusion of 3 mg/kg propofol</td>
<td>Case report</td>
</tr>
<tr>
<td>Stecker MM et al 1998 USA</td>
<td>16 Adult patients with RSE. All patients intubated. Thiopentone (8) v propofol (8) 1mg/kg over 5 min, repeated if needed.</td>
<td>Open trial</td>
<td>Time to seizure termination (elimination of EEG and clinical seizures)</td>
<td>Thiopentone 123 min vs propofol 2.6 min (p=0.002) Thiopentone 82% v propofol 63% (NS)</td>
<td>Open trial. Some of the propofol patients part of another trial. Others identified retrospectively. Very small trial</td>
</tr>
</tbody>
</table>
The evidence for propofol in RSE is weak. It is based on case series and small open label trials. However, there is some theoretical basis for the use of propofol in RSE and the observations made in the studies presented are encouraging. Further work is clearly needed but in refractory status epilepticus resistant to conventional treatment it would not be unreasonable to try propofol.

**CLINICAL BOTTOM LINE**
Propofol may be considered as a treatment for status epilepticus if conventional treatments have failed.

**Comment(s)**

The studies suggest some benefit for the use of nerve block in fractured neck of femur in the pre-operative setting, most notably in extracapsular fractures. However, the studies are small and have important weaknesses.

**Search strategy**
Medline 1966–12/01 using the OVID interface. (exp femoral neck fractures OR exp hip fractures) AND (exp analgesia OR exp anesthesia, local OR exp anesthetics, local OR regional analgesia.mp) AND (exp nerve block OR nerve block.mp OR regional nerve block better than intravenous analgesia) at [providing and maintaining analgesia]

**Search outcome**
Altogether 21 papers found. Of these only four were relevant to the preoperative setting (table 5).

**Comment(s)**

The studies suggest some benefit for the use of nerve block in fractured neck of femur in the pre-operative setting, most notably in extracapsular fractures. However, the studies are small and have important weaknesses.

**Table 5**

<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>Finlayson BJ and Underhill TJ, 1988, UK</td>
<td>36 patients age range 31–95 with fractured neck of femur. Intracapsular [16] and extracapsular [20] Femoral nerve block [10 ml 0.5% bupivocaine]</td>
<td>Cohort study</td>
<td>Objective Assessment Subjective Assessment Complications</td>
<td>29 had reduced sensation. 7 no change (6 intracapsular, 1 extracapsular) 26 patients had reduced pain [14 intracapsular, 12 extracapsular], 4 had no pain (all extracapsular), 6 had no change (all intracapsular) None found</td>
<td>No control group Statistical significance not assessed Heterogenous group of patients (2 young patients, 1 with multiple injuries)</td>
</tr>
<tr>
<td>Haddad FS and Williams RL, 1995, UK</td>
<td>50 patients with extracapsular fractures of the femoral neck, age range 68–89 Femoral nerve block [0.3 ml/kg 0.25% bupivocaine] v systemic analgesia alone</td>
<td>RCT</td>
<td>Mean pain score using VAS Analgesic requirements Incidence of complications</td>
<td>Greater reduction in nerve block group— statistically significant at 1.5 min and 2 hours Reduced in the 24 hours from admission in nerve block group Significantly reduced in nerve block group</td>
<td>Small number of patients. Only extracapsular fractures included. Optimal analgesia given to control group</td>
</tr>
<tr>
<td>Chudinov A et al, 1999, Israel</td>
<td>40 consecutive patients age 67–96 years with fractured neck of femur undergoing surgery. Continuous psoas compartment block [2 mg/kg of 0.25% bupivocaine with 0.8 ml/kg adrenaline] v analgesia</td>
<td>RCT</td>
<td>Pain relief (VAS) Complication Rate</td>
<td>Significant difference in psoas block group at 8 and 16 hours preoperatively and 16, 24, and 32 hours postoperatively 3 cases of local erythema in psoas group Method of randomisation unclear. Small numbers of patients. Unblinded. Unclear whether optimal analgesia given to control group. Type of block not typically used in emergency setting</td>
<td></td>
</tr>
<tr>
<td>Parker MJ et al, 2000, UK</td>
<td>269 patients from 7 randomised or quasi-randomised trials with fractured neck of femur— analgesia/anaesthesia given preoperatively in 2 of these trials. Patients given either regional block or intravenous analgesia</td>
<td>Systematic review</td>
<td>Pain levels Analgesic Requirements Complication rate</td>
<td>Reduction in mean pain score in nerve block group Reduced analgesic requirements in nerve block group No difference</td>
<td>Heterogenous group of patients Trials involving both preoperative and postoperative patients were assessed together Different forms of block used in different trials Small numbers in contributing studies Unclear if amount of parenteral analgesia given was optimal</td>
</tr>
</tbody>
</table>
Three part question
In [an adult with acute severe asthma] is [delivery of bronchodilator therapy via nebuliser or spacer] better at [improving airflow and reducing the need for admission]? 

Search strategy
Medline 1966–12/01 using the OVID interface. ([exp asthma OR asthma.mp] AND [exp bronchodilator agents OR bronchodilator$.mp] AND [exp nebulizers and vaporizers OR nebulise$.mp OR nebulize$.mp OR spacer$.mp]) LIMIT to human AND english language.

Search outcome
Altogether 1734 papers found of which two were meta-analyses that included all other relevant papers (table 6).

Comment
The two meta-analyses have four studies (199 patients) in common.