Steroid delivery in croup
Report by Sue Maurice, senior registrar
Search checked by Terry Gilpin, specialist registrar

Clinical scenario
A 3 year old child attending the emergency department with moderately severe croup. I know that croup responds to steroid therapy, but I want to know whether oral dexamethasone is a better treatment than nebulised budesonide.

Three part question
In a [child with croup] is [oral dexamethasone better than nebulised budesonide] at [reducing length of hospital stay and reducing croup score]?

Search strategy
Medline 1966 to 12/97 using the OVID interface. {[exp croup OR croup ti,ab,sh OR laryngotracheitis. ti,ab,sh OR laryngotracheobronchitis ti,ab,sh] AND [exp budesonide. ti,ab,sh OR dexamethasone. ti,ab,sh]}

Search outcome
Sixty four papers found of which 63 irrelevant; the remaining paper is shown in table 3.

Comment
There is no significant difference in the clinical effectiveness of oral and nebulised steroids in croup. The effect of simple humidification has not been accounted for in this study.

Clinical bottom line
Either oral dexamethasone or nebulised budesonide can be used to good effect in moderately severe croup. Dexamethasone is currently much cheaper.


<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>Geelhoed and Macdonald, 1995, Australia</td>
<td>80 children (5-158 months) randomised to receive budesonide dexamethasone or placebo</td>
<td>PRCT</td>
<td>Duration of hospitalisation</td>
<td>Significantly shorter for both steroid groups (12h) vs placebo (20h)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Time to croup score less than 1</td>
<td>Significantly shorter for both steroid groups (2-3h) vs placebo (6h)</td>
<td></td>
</tr>
</tbody>
</table>

PRCT=prospective randomised controlled trial.

Haematoma block versus intravenous regional anaesthesia in Colles’ fractures
Report by Simon Carley, clinical fellow
Search checked by Lesley Bethune, specialist registrar

Clinical scenario
A 71 year old women presents to the emergency department after a fall on the outstretched hand; x rays reveal a Colles’ fracture requiring manipulation. Having worked in several different departments you have experience of reducing these fractures with either Bier's block or haematoma block. You wonder which is best for your patient.

Three part question
In [elderly patients with uncomplicated Colles’ fractures] is [Bier’s block or haematoma block] better at [reducing pain during manipulation, reducing the need for multiple manipulations and improving long term function].

Search strategy
Medline 1966 to 01/98 using OVID interface. {[exp colles fracture OR exp wrist injuries OR colles. ti,ab,sh] AND [biers. ti,ab,sh OR haematoma ti,ab,sh OR exp nerve block OR exp anesthesia, intravenous OR regional anesthesia. ti,ab,sh OR exp local anesthesia OR local anesthesia. ti,ab,sh]}

Search outcome
Forty six papers found of which four were of sufficient quality for inclusion; the remaining papers are shown in table 4.

Comment
Pain and the need for remanipulation are very relevant patient outcomes but long term function is only addressed in one paper. The use of grip strength as an indicator of wrist function is only a crude assessment and further work is needed. Clearly there are other methods of reducing Colles’ fractures (sedation, general anesthesia, nerve blockade, etc) which have not been addressed in this paper. However, Bier's block and haematoma block are the two most common methods of reducing this fracture in the UK with an increase in the
proportion of department using haematoma block between 1989 and 1994 (see Cobb and Houghton).

**Clinical bottom line**
On the best evidence available at the present time intravenous regional anaesthesia (Bier’s block) is preferable to local anaesthesia (haematoma block) for the reduction of uncomplicated Colles’ fractures in the elderly.

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**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>Kendall et al, 1997, England¹</td>
<td>150 patients with Colles’ fractures that were either angulated more than 15 degrees or shortened more than 2 mm, randomised between Bier’s block and haematoma block</td>
<td>PRCT</td>
<td>Median pain scores: Administration of block Manipulation Discharge Remanipulation rate Time in department Radiological outcome (angulation)</td>
<td>Less painful with Bier’s Less painful with Bier’s Less painful with Bier’s Less with Bier’s No difference Better with Bier’s</td>
<td>Data missing in 8 patients, no long term follow up</td>
</tr>
<tr>
<td>Abbaszadegan and Jonsson, 1990, Sweden²</td>
<td>99 consecutive patients with Colles’ fractures requiring manipulation, randomly assigned into treatment groups</td>
<td>PRCT</td>
<td>Pain: During manipulation At 2 months At 3 months At 6 months Grip strength at 2, 3, and 6 months Range of wrist motion Radiographic changes</td>
<td>Less painful with Bier’s No difference No difference No difference No difference</td>
<td>Randomisation procedures are not explicit, inadequate basic data reporting, no account of “handedness” made in assessment of grip strength</td>
</tr>
<tr>
<td>Wardrope et al, 1985, England³</td>
<td>79 patients aged over 45 with Colles’ fracture, randomised between Bier’s block and haematoma block</td>
<td>PRCT</td>
<td>Pain during manipulation Radiographic changes Need for remanipulation</td>
<td>Less painful with Bier’s No difference Less with Bier’s</td>
<td>Questionable randomisation, some missing data</td>
</tr>
<tr>
<td>Cobb and Houghton, 1985, England⁴</td>
<td>100 consecutive patients with uncomplicated Colles’ fracture</td>
<td>PRCT</td>
<td>Pain: Manipulation First few hours</td>
<td>Less Less painful with Bier’s</td>
<td>Randomisation procedures are not explicit, inadequate basic data reporting</td>
</tr>
</tbody>
</table>

PRCT=prospective randomised controlled trial.

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Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary. Haematoma block versus intravenous regional anaesthesia in Colles' fractures.
S Carley

doi: 10.1136/emj.15.4.229-a

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http://emj.bmj.com/content/15/4/229.2.citation

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