

Clinical bottom line

Patients with lone acute severe headache should have urgent CT; if this is negative then a LP should be performed.

- 1 Macdonald A, Mendelow AD. Xanthochromia revisited: a re-evaluation of lumbar puncture and CT scanning in the diagnosis of subarachnoid haemorrhage. *J Neurol Neurosurg Psychiatry* 1988;51:342-4.
- 2 Van der Wee N, Rinkel GJE, Hasan D, et al. Detection of subarachnoid haemorrhage on early CT: is lumbar puncture still needed after a negative scan? *J Neurol Neurosurg Psychiatry* 1995;58:357-9.

- 3 Sames TA, Storrow AB, Finkelstein JA, et al. Sensitivity of new-generation computed tomography in sub-arachnoid hemorrhage. *Acad Emerg Med* 1996;3:16-20.
- 4 Sidman R, Connolly E, Lemke T. Subarachnoid haemorrhage: lumbar puncture is still needed when computerised tomography scan is normal. *Acad Emerg Med* 1996;3:827-31.
- 5 Latchaw RE, Silva P, Falcone SF. The role of CT following aneurysmal rupture. *Neuroimaging Clin N Am* 1997;7:693-708.
- 6 Morgenstern LB, Luna-Gonzales H, Huber JC Jr, et al. Worst headache and subarachnoid hemorrhage: prospective, modern computed tomography and spinal fluid analysis. *Ann Emerg Med* 1998;32:297-304.

Mydriatics in corneal abrasion

Report by Fiona Carley, *Specialist Registrar Ophthalmology*
 Search checked by Simon Carley, *Specialist Registrar*

Clinical scenario

A 20 year old man presents to the emergency department with a history of something having blown into his eye. Clinical examination reveals a small abrasion to the cornea. You prescribe chloramphenicol ointment and discharge the patient. A friendly ophthalmologist suggests that you should have given a dilating drop as well. You wonder if there is any evidence to support this.

Three part question

[In patients with simple corneal abrasions] is [a cycloplegic better than simple lubrication] at [reducing pain and discomfort]?

Search strategy

Medline 1966-12/00 using the OVID interface. [(exp cornea OR exp eye injuries OR corneal abrasion.mp) AND (exp mydriatics OR cycloplegics.mp OR exp cyclopentolate OR

cyclopentolate.mp OR exp atropine OR homatropine.mp OR exp tropicamide OR tropicamide.mp)] LIMIT to human, english AND abstracts.

Search outcome

Altogether 98 papers found of which 97 were irrelevant or of insufficient quality. The remaining paper is shown in table 4.

Comments

The use of cycloplegics/mydriatics is traditional and common practice for the treatment of corneal abrasions. However, there is no good evidence to support this. The only study pertinent to the three part question is flawed because of poor follow up and a number of compounding factors. However, even this study found no benefit to mydriatics (homatropine 2%).

Clinical bottom line

Cycloplegics cannot be recommended for use in patients with corneal abrasion.

- 1 Brahma AK, Shah S, Hillier VF, et al. Topical analgesia for superficial corneal injuries. *J Accid Emerg Med* 1996;13:186-8.

Table 4

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Brahma AK et al UK, 1996	401 patients with corneal abrasion Lubrication alone v 2% homatropine (single dose) v flubiprofen 0.03% QDS v flubiprofen 0.03% qds and homatropine stat	PRCT	Difference in pain score over 24 hour period and use of oral analgesia	No difference between homatropine and simple lubrication. No difference between the 2 groups receiving flubiprofen	Only 55% of patients followed up. All patients also received chloramphenicol ointment. Study not blinded

Midazolam and emergence phenomena in children undergoing ketamine sedation

Report by Simon Carley, *Specialist Registrar*
 Search checked by Bruce Martin, *Specialist Registrar*

Clinical scenario

A 4 year old boy presents to the emergency department with a 4 cm laceration to the thigh. This requires cleaning and layered suture closure. You decide to sedate him using ketamine intramuscularly. You are successful and close the wound. However, while he is

recovering he seems to be experiencing unpleasant hallucinations. You wonder whether a small dose of midazolam given with the ketamine would have prevented this.

Three part question

[In children undergoing ketamine sedation in the emergency department] is [benzodiazepines plus ketamine better than ketamine alone] at [reducing emergence phenomena and minimising complications and time of sedation]?

Table 5

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Sherwin TS <i>et al</i> , USA, 2000	104 children aged 1–15 years. 68% had orthopaedic injuries and 30% had wounds. Ketamine 1.5 mg/kg <i>v</i> ketamine 1.5 mg/kg plus midazolam 0.05 mg/kg 2 min later	PRCT	Time to discharge Adequacy of sedation Emergence phenomena	96 min <i>v</i> 105 min (not significant) 64% <i>v</i> 61% (not significant) No difference	Large age range. No data on IM ketamine use. Low power for low incidence complications.
Wathen JE <i>et al</i> , USA, 2000	266 patients aged 4 months to 18 years. 65% had fractures and 25% had lacerations. Ketamine 1 mg/kg plus glycopyrrolate 5 microgram/kg (137) <i>v</i> Ketamine 1 mg/kg plus glycopyrrolate 5 microgram/kg plus midazolam 0.1 mg/kg	PRCT	Distress (Observational score of behavioural distress) Total sedation time Adverse events Physician satisfaction Parental satisfaction	No difference 78 min <i>v</i> 70 min (not significant) Less vomiting (19.4% <i>v</i> 9.6%) and nightmares (0% <i>v</i> 3.1%) with midazolam No difference No difference	Large age range. No data on IM ketamine use. Low power for low incidence complications.

Search strategy

Medline 1966–02/01 using the OVID interface. [(exp ketamine OR ketamine.mp) AND (exp benzodiazepines OR benzodiazepines.mp OR exp midazolam OR midazolam.mp OR exp diazepam OR diazepam.mp OR VERSED.mp OR exp lorazepam OR lorazepam.mp OR hyponotics and sedatives.mp OR hypnovel.mp) AND (child.mp OR children.mp)] LIMIT human, english AND abstracts.

Search outcome

Altogether 71 papers found of which only one was relevant. An additional paper has recently been published and was not indexed on Medline at the time of searching. These two papers are shown in table 5.

Comments

These two well designed studies investigate the question directly. There seems to be no advantage in the addition of midazolam for IV ketamine sedation. Its use in IM ketamine sedation may be different as the pharmacokinetics of both drugs may be different via the IM route.

Clinical bottom line

Midazolam is not needed as an adjunct to ketamine sedation in children.

1 Sherwin TS, Green SM, Khan A, *et al*. Does adjunctive midazolam reduce recovery agitation after ketamine sedation for pediatric procedures? A randomized double blind placebo controlled trial. *Ann Emerg Med* 2000;35:229–38.

2 Wathen JE, Roback MG, Mackenzie T, *et al*. Does midazolam alter the clinical effects of intravenous ketamine sedation in children? A double blind randomized controlled emergency department trial. *Ann Emerg Med* 2000;36:579–88.

The prehospital use of pneumatic anti-shock garments

Report by Ian Crawford, *Clinical Research Fellow*

Search checked by Angaj Ghosh, *Senior Clinical Fellow*

Clinical scenario

You are the doctor on scene of a road traffic accident attending a 30 year old man who has sustained blunt trauma to the abdomen. Systolic BP is 70 mm Hg despite resuscitation. Someone suggests using the pneumatic anti-shock garment (PASG). You cannot remember from your recent ATLS course whether this can be used to support blood pressure in hypotensive patients. You wonder if PASG use

has been shown to have any effect on mortality.

Three part question

In [a hypotensive trauma victim] does [the use of PASG/MAST] reduce [mortality, length of hospital stay or length of time spent in ICU]?

Search strategy

Medline 1966–12/00 using the OVID interface AND cochrane database. {(exp g suits OR g suit.mp OR pneumatic antishock garment.mp OR military antishock trouser\$.mp OR PASG.mp OR MAST suit.mp) AND (exp wounds and injuries OR trauma\$.mp) AND

Table 6

Author, date and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Dickinson K and Roberts I, UK, 1999	2 prospective randomised controlled trials including 1202 patients Adults >15 years with blunt or penetrating injuries and a systolic BP ≤90 mm Hg. Patients excluded where PASG was only used for fracture splinting. PASG <i>v</i> no PASG	Meta-analysis	Overall mortality Length of hospital stay Length of time spent in ICU	Pooled relative risk of mortality for patients randomised to PASG group was 1.13 (95% CI 0.97, 1.32) No reduction in length of hospital stay No reduction in length of time spent in ICU	Poor quality allocation concealment in both trials Loss of 14% of patients from one trial with disparity in the two groups