

Table 5

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Borron SW <i>et al</i> , 1999, France	38 acute poisonings of which 11 patients had plasma ethylene glycol concentrations of 0.20 g/l or more.	Prospective observational	Death Serum creatinine	1/38 patients died 0/7 patients who had a normal renal function at presentation had no further deterioration in serum creatinine 4/38 experienced	Simple case series- all patients received fomepizole, no controls Details regarding patient demographics and outcomes inadequate No account taken of confounding alcohol ingestion
Brent J <i>et al</i> , 1999, USA	23 acute poisonings of which 19 met inclusion criteria including a plasma ethylene glycol concentration of >20 mg per decilitre	Prospective observational	Death Serum creatinine Ethylene glycol metabolites Cranial neuropathies Side effects	1/19 patients died 17/19 underwent haemodialysis as per study protocol, 3/19 had an increased serum creatinine at last study reading All patients demonstrated progressive reduction in blood glycolate concentration 0/19 patients 2 patients had seizures, 2 patients experienced headaches, 2 patients became bradycardic	Simple case series studying the metabolic progress of patients All patients received fomepizole - no controls Authors cannot conclude that fomepizole is safe and effective

Search strategy

Medline 1966–06/02 using the OVID interface. (exp Ethylene Glycol/ or ethylene glycol.mp OR ethylene.mp OR antifreeze.mp OR antifreeze.mp) AND (exp ethanol or ethanol.mp OR exp Renal Dialysis/ or haemodialysis.mp OR exp pyrazoles or pyrazoles.mp OR fomepizole.mp OR methylpyrazole.mp OR exp antidotes OR antidote\$.mp OR pyrazol\$.mp) LIMIT to human AND English.

Search outcome

Altogether 524 papers were found of which only two looked at newer treatments and none were comparative. These two papers are shown in table 5.

Comment(s)

Ethylene glycol poisoning is not common and small number studies are justified. The studies shown above are observational rather than randomised trials with established practice. Furthermore in the second study 17 of 19 patients underwent haemodialysis as well as receiving fomepizole. A satisfactory randomised trial with fomepizole and “non-fomepizole” arms is needed. Both the studies shown above were supported by grants from the manufacturers of fomepizole (Antizol).

► CLINICAL BOTTOM LINE

There is no evidence comparing the effectiveness of haemodialysis, ethanol, or fomepizole in treating ethylene glycol poisoning. Local guidance should be followed.

Borron SW, Megarbane B, Baud FJ. Fomepizole in treatment of uncomplicated ethylene glycol poisoning. *Lancet* 1999;**354**:831.

Brent J, McMartin K, Phillips S, *et al*. Fomepizole for the treatment of ethylene glycol poisoning. *N Engl J Med* 1999;**340**:832–8.

Bed rest after lumbar puncture

Report by Stewart Teece, *Clinical Research Fellow*

Checked by Ian Crawford, *Research Fellow*

Abstract

A short cut review was carried out to establish whether a period of bed rest reduces the incidence of headache or other complications in patients undergoing diagnostic lumbar puncture. Altogether 85 papers were found using the reported search, of which five 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 27 year old woman attends the emergency department with a two day history of headache with mild neck stiffness. She appears otherwise well. Her CT scan is normal and you feel that if a lumbar puncture is normal she can be discharged. The duty physician advises you that the patient will require four hours bed rest after the lumbar puncture. The duty anaesthetist overhears and says that the patient will be able to go home immediately. You wonder if either of them is right.

Three part question

In [patients undergoing diagnostic lumbar puncture] does [a period of bed rest] reduce [the incidence of headache or other complications].

Search strategy

Medline 1966 to 06/02 using the Ovid Interface. {[exp spinal puncture OR (spinal adj5 tap).af OR (spinal adj5 puncture).af OR (spinal adj5 injection).af OR (lumbar adj5 tap).af OR (lumbar adj5 puncture).af OR (lumbar adj5 injection).af OR (dural adj5 tap).af OR (dural adj5 puncture).af OR (dural adj5 injection).af] AND [exp posture OR posture.af OR supine.af OR flat.af OR immobilis\$.af OR recumben\$.af OR (bed adj5 rest).af] AND [exp headache OR exp headache disorders OR headache.af]} LIMIT to human AND English Language.

Search outcome

Altogether 85 papers were found five of which were relevant to the three part question. These are shown in table 6.

Comment(s)

Most of the papers have found no statistical significance between the two groups. A rough calculation based on the data available shows that ambulant patients developed headache 31.7% (95% CI 27.4 to 36.1) of the time while those having bed rest suffered from this symptom 35.8% (95% CI 31.3 to 40.3) of the time. The confidence intervals overlap. Any difference between the two groups is likely to be so small that the sample size necessary to reveal it would be huge. The studies excluded patients with preceding headache. However, the question posed is about a patient undergoing a lumbar puncture to aid in the diagnosis of headache. A study by Kuntz *et al*²⁶ has shown a 21% higher incidence of post lumbar puncture

Table 6

Author, date, and country	Patient group	Study type (level of evidence)	Outcomes	Key results	Study weaknesses
Carbaat PA and van Crevel H, 1981, Netherlands	100 neurological patients undergoing LP all done by same investigator with 18G needle. 50 ambulant, 50-24 hour bed rest.	Controlled trial	Incidence of headache	ambulant- 38% bed rest- 36% (NS)	p not stated small numbers
Dieterich M and Brandt T, 1985, Germany	160 patients undergoing LP for ? MS. 78 with 30 minute prone with head down tilt, 82 immediately ambulant. 20G and 22G needles used	Controlled trial	Incidence of headache Headache described as above	ambulant 41% head down tilt 44% ambulant 18% head down tilt 14%	Statistical significance not assessed. Patients with prior headache excluded. Substudy of needle size may complicate results. Difficult LP excluded.
Vilming ST <i>et al</i> , 1988, Norway	150 men 150 women for neurological investigation. 75 men and 75 women ambulant. Remainder 3 h prone then 3 h supine. All 22G using needle.	PRCT	Headache Nausea	ambulant 35% bed rest 39% (NS) ambulant 23% bed rest 13% (p<0.05)	Significance headache calculated but not stated. Patients with preceding headache excluded.
Spriggs DA <i>et al</i> , 1992, UK	110 patients undergoing diagnostic LP. 54 ambulant 56 bed rest for 4 hours	PRCT	Incidence of headache	Ambulant 32% Bed rest 31% (NS)	Statistical significance assessed but not given. Small discrepancies between two groups for needle size and operator experience. Patients with headache excluded.
Vimala J <i>et al</i> , 1998, Country not stated but ? India	204 patients undergoing diagnostic LP. 100 ambulant 104 24 hour bed rest.	PRCT	Incidence of headache Headache considered severe	ambulant 15% (95% CI 12 to 22%) bed rest 18% (95% CI 8 to 22%) Ambulant 57% Bed rest 12% (p=0.02)	Randomisation method unclear but possibly highly flawed. Discrepancies in needle size and operator experience.

symptoms in those with preceding headache. A further study is therefore required to assess the question in patients with pre-existing headache.

► CLINICAL BOTTOM LINE

Bed rest does not decrease the incidence of post lumbar puncture headache.

Carbaat PA, van Crevel H. Lumbar puncture headache: controlled study on the preventive effect of 24 hours' bed rest. *Lancet* 1981;ii:1133-6.

Dieterich M, Brandt T. Is obligatory bed rest after lumbar puncture obsolete? *Eur Arch Psychiatr Neural Sci* 1985;235:71-5.

Vilming ST, Schrader H, Monstad I. Post lumbar-puncture headache: the significance of body posture. A controlled study of 300 patients. *Cephalalgia* 1998;8:75-8.

Spriggs DA, Burn DJ, French J, *et al*. Is bed rest useful after diagnostic lumbar puncture? *Postgrad Med J* 1992;68:581-3.

Vimala J, Peter JV, Jeyaseelan L, *et al*. Post lumbar puncture headache: Is bed rest essential? *J Assoc Physicians India* 1998;46:930-2.

***Kuntz KM**, Kokmen E, Stevens JC, *et al*. Post lumbar puncture headaches: experience in 501 consecutive procedures. *Neurology* 1992;42:1884.

Difficult intubation, the bougie and the stylet

Report by Ian Jones, Registered Paramedic

Checked by Katherine Roberts, Research officer

Abstract

A short cut review was carried out to establish whether a gum elastic bougie is more effective than a stylet at improving the success rate in difficult intubation. Altogether 32 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 paramedic ambulance is dispatched to a 36 year old woman who has fallen from a horse. On arrival the rider is not wearing a helmet, is unconscious, and has laboured diaphragmatic

breathing. A cervical spine injury is suspected and orotracheal intubation is indicated because of the reduced respiratory effort, possible head injury, and the long transport time to the nearest emergency department. The patient has a grade 3 laryngoscopic view (Cormack and Lehane). You wonder whether intubation would be made easier if you had a gum elastic bougie or stylet.

Three part question

In a [restricted view intubation] is the [gum elastic bougie more effective than a stylet] at [improving the intubation success rate]?

Search strategy

Medline and HealthStar 1966-06/02 using the OVID interface. [{exp intubation, intratracheal OR intubation\$.mp OR intubation\$.mp OR exp intubation OR exp laryngoscopy OR laryngoscopy.mp} AND {introducer.mp OR bougie\$.mp OR gum elastic.mp OR stylet\$.mp}] LIMIT to human AND English.

Search outcome

Altogether 334 papers found of which one was relevant. This is shown in table 7.

Comment(s)

The use of simulated views is less than ideal. Despite this drawback the results clearly answer the question posed. A further study comparing the bougie, the lighted and unlighted stylet in both grade 3 and grade 4 views would be useful.

► CLINICAL BOTTOM LINE

The gum elastic bougie is superior to the stylet at increasing the intubation success rate, when tested on simulated grade 3 views.

Gataure PS, Vaughan RS, Latta IP Simulated difficult intubation. Comparison of the gum elastic bougie and the stylet. *Anaesthesia* 1996;51:935-8.