Table 1

Author, date, country	Patient group	Study type	Outcomes	Key results	Study weaknesses
McGlone <i>et al</i> , 1998, UK	102 children (1–7 years). Divided into either midazolam (0.5 mg/kg nasal) or ketamine (2.5 mg/kg IM)	Prospective "allocation"	Behaviour before, during and after procedure. Vomiting before and after discharge. Time to discharge. Parental and nursing satisfaction	Significantly less restraint required in ketamine group ($p < 0.01$). Ketamine caused more vomiting during recovery ($p = 0.012$). Midazolam children discharge 7 min earlier. Ketamine significantly preferred ($p = 0.018$)	? randomised. Two different routes of administration, uncertain final bioavailability of intranasal route. Small numbers. Atropine added to ketamine group
Everitt <i>et al</i> , 2002, Australasia	54 Australasian EDs. Ketamine 12%, midazolam 77%	Survey of agents used and ED physicians. 45 of 54 surveyed departments responded	Linear analogue depiction of perceived efficacy of sedation	IV ketamine 14% better sedation than midazolam	One respondent per ED. Open to responder bias. Not patient focused. No standard doses. Not limited to ketamine and midazolam alone
Roback <i>et al</i> , 2005, USA	2500 consecutive children (median age 6.7 years) receiving IV or IM procedural sedation. Ketamine 59%, midazolam/ketamine 12%, midazolam 10.4%	Prospective database. Retrospectively analysed	Respiratory complications. Apnoea/larygospasm/desaturation Vomiting	Ketamine 6.1%, ketamine/midazolam 10%, midazolam 5.8% Ketamine 10.1%, ketamine/midazolam 5.4%, midazolam 0.8%	Not randomised, not blinded. Multiple drug combinations. ?standardised doses. Glycopyrolate was given to all who had ketamine. ?mandatory reporting
Sacchetti <i>et al</i> , 2007, USA	226 children aged <13 years. Ketamine 60%, midazolam 28%. Across 14 community EDs	Prospective database	Adverse events	Nil recorded for both drugs	Database "self-reported", ?reliability. Low rate of respiratory events reported

ED, emergency department; IM, intramuscular; IV, intravenous.

► CLINICAL BOTTOM LINE

Ketamine and midazolam have similar safety profiles in the emergency setting for children. Ketamine causes more vomiting but appears to be the preferred agent for most parents and many emergency department physicians.

McGlone RG, Ranasinge S, Durham S. An alternative to "brutacaine": a comparison of low dose intramuscular ketamine with intranasal midazolam in children before suturing. *Emerg Med J* 1998;15:231–6.

Roback MG, Wathen JE, Bajaj L, *et al*. Adverse events associated with procedural sedation and analgesia in a pediatric emergency department: a comparison of common parental drugs. *Acad Emerg Med* 2005;12:508–13.

Everitt I, Younge P, Barnett P. Paediatric sedation in emergency departments: what is our practice? *Emerg Med* 2002;14:62–6.

Sacchetti A, Stander E, Ferguson N, *et al*. Pediatric procedural sedation in the community emergency department: results from the ProSCED registry. *Pediatr Emerg Care* 2007;23:218–22.

Use of octreotide acetate to prevent rebound hypoglycaemia in sulfonylurea overdose

Report by Ziauddin Hassan, Registrar in Emergency Medicine

Checked by John Wright, Consultant in Emergency Medicine

Newcastle General Hospital, Newcastle, UK

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Abstract

A short cut review was carried out to establish whether octreotide can prevent rebound hypoglycaemia after sulfonylurea overdose. Fourteen papers were found using the reported searches, 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 summarised in table 2. It is concluded that octreotide may be safe and effective in this situation.

Three-part question

In [patients with sulfonylurea overdose] does [octreotide acetate] prevent [rebound hypoglycaemia]?

Clinical scenario

A 56-year-old man known to have non-insulin dependent diabetes mellitus presents to the emergency department after having taken an overdose of his own oral hypoglycaemic, glipizide. The initial blood sugar value was very low, so he was given a 50 ml bolus of 50% dextrose. The patient recovered but, despite a continuous intravenous infusion of 10% dextrose, hypoglycaemia recurred. You know that intravenous dextrose stimulates insulin release, and that sulfonylurea compounds have a long half-life. You wonder about the use of the somatostatin analogue octreotide, which causes pronounced suppression of serum immunoreactive insulin and C-peptide concentration, and whether it is safe.

Search strategy

Medline 1950 to April 2007 using Ovid interface: [exp.hypoglycemia or rebound hypoglycaemia. mp] AND [exp. Hypoglycaemic agent/ or Sulfonylurea compounds/ or sulfonylurea overdose.mp or sulfonylurea poisoning.mp] AND [exp octreotide acetate or octreotide .mp] and LIMIT to human AND English.

The Cochrane Library issue 2 2007 Exp hypoglycemia [MeSH] and exp sulfonylurea compounds [MeSH] and exp octreotide [MeSH].

Outcome

No relevant papers found on Cochrane library. Fourteen papers were identified on Medline of which only two were directly relevant to the question. These are summarised in table 2.

Comments

There are very few reports and most of them are reviews, case reports and letters. Each of these studies has small numbers of patients. It is difficult to recruit a large series of patients in a single centre. A large multicentre study is needed.

Table 2

Author, country, date	Patient group	Study type	Outcomes	Key results	Study weaknesses
Boyle <i>et al</i> , 1993, USA	8 healthy volunteers, age range 18–50 years given 1.45 mg/kg glipizide. When glucose had dropped to 50 mg/dl then 50 ml 50% glucose was given followed by either variable dextrose infusion or octreotide. At 5 h a second 50% glucose bolus was administered and the time to return to target glucose value was measured	Experimental study on healthy volunteers	Time to return to target glucose value of 85 mg/dl after second 50% glucose bolus	3 h vs 6.5 h (p=0.001)	Small number, experimental study. Not blinded, subject to bias
McLaughlin <i>et al</i> , 1999, USA	9 patients of whom 6 had taken glyburide OD and 3 glipizide OD. Age range 20–65 years	Observational	Mean number of episodes of hypoglycaemia before and after treatment with octreotide Mean number of ampoules of 50% dextrose before and after treatment with octreotide	3.2 vs 0.2 (p=0.008) 2.9 vs 0.2 (p=0.004)	Retrospective chart review design. Sample size small

OD, once daily.

► CLINICAL BOTTOM LINE

Octreotide may be safe and effective in preventing rebound hypoglycaemia in sulfonylurea overdose. Octreotide in combination with dextrose can be considered for first line therapy in the treatment of sulfonylurea-induced hypoglycaemia

Boyle PJ, Justice K, Krentz AJ, *et al*. Octreotide reverses hyperinsulinemia and prevents hypoglycemia induced by sulfonylurea overdoses. *Jl Clin Endocrinol Metab* 1993;**76**:752–6.

McLaughlin SA, Crandall CS, McKinney PE. Octreotide: an antidote for sulfonylurea-induced hypoglycemia. *Ann Emerg Med* 2000;**36**:133–8.

Ultrasound to detect haemothorax after chest injury

Report by Kirsty McEwan, *Medical Student*

Checked by Peter Thompson, *Consultant*

Guy, Kings and St Thomas' Medical School, London, UK

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Abstract

A short cut review was carried out to establish whether ultrasonography is as sensitive and specific as chest x ray or computed tomography (CT) scan in detecting haemothorax after chest trauma. Thirty-nine papers were found using the reported searches, 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 shown in table 3. It is concluded that ultrasonography is more sensitive and as specific as chest x ray at detecting haemothorax in patients with chest trauma.

Three-part question

[In adults with thoracic trauma] does [emergency department ultrasonography have better clinical utility than chest x ray] at [diagnosing haemothorax]?

Clinical scenario

A patient arrives in the emergency department after suffering thoracic trauma. A member of the team suggests using ultrasound to search for the presence of haemothorax, as an extension of the usual FAST assessment. You wonder how accurate the ultrasound would be compared to either the usual initial supine chest x ray or to a CT scan which could be performed later in the patient's assessment.

Search strategies

Medline 1966 to present (accessed 29 May 2007) using the OVID interface: [thorax.mp or thoracic.mp or thoracic.mp or emergency.mp or chest.mp or pulmonary diseases.mp or thoracic lesions.mp or chest disease.mp] AND [radiography.mp or diagnosis/ or diagnosis, computer assisted/ or diagnosis, differential/ or "diagnostic techniques and procedures"/ or diagnostic imaging/ or radiography or radiography, thoracic/ or tomography, x-ray/ or ultrasonography/ or diagnostic techniques, cardiovascular/ or diagnostic techniques, respiratory system/ or diagnostic tests, routine/ or really diagnosis or computed tomography.mp or CT.mp or thoracic CT.mp] AND [ultrasound.mp or ultrasonography.mp or explode ultrasonography/ or sonography.mp or radiological diagnosis.mp or ultrasonographic.mp or thoracic radiological procedures.mp or emergency ultrasound.mp or transthoracic ultrasound.mp or thoracic ultrasound.mp] AND [Hemothorax.mp or hemothorax.mp or haemothorax.mp or haemothorax.mp or traumatic effusion.mp].

The Cochrane Library Issue 2 2007: (hemothorax):ti,ab,kw OR (haemothorax):ti,ab,kw

Outcome

Altogether 39 papers were found in Medline, of which 34 were irrelevant or of insufficient quality. Twenty-five papers were found in Cochrane—the only relevant paper had already been found in Medline. A further paper was found by scanning the references of relevant papers. All relevant papers are summarised in table 3.

Comments

Ultrasound is a sensitive, specific and accurate technique for detecting haemothorax in thoracic trauma patients. CT does detect some haemothoraces not seen on ultrasound; however, in a clinical situation, the two methods are performed on different patient populations and so are not directly comparable. The most clinically relevant diagnostic imaging method with which to compare ultrasound is the supine chest radiograph as they both are performed in the initial assessment of the patient. When compared directly to the supine chest x ray, ultrasound is shown to be more specific at detecting the presence of the haemothorax and is at least as specific and accurate. It also has the added advantage of being able to be performed in much less time, making it a useful diagnostic tool for the early diagnosis of haemothorax. However, it cannot replace the chest x ray as many other injuries can be shown on the chest x ray that cannot be demonstrated by ultrasound.