Phystostigmine as treatment for severe CNS anticholinergic toxicity

Editor—We report the successful use of phystostigmine to treat central anticholinergic toxicity: a use described before but rarely seen.1 We treated a patient admitted after an overdose of amisulpride and procyclidine (not his own medication). He became extremely agitated and was treated with intravenous benzodiazepines (total quantity in 26 hours equivalent to 125 mg diazepam) but remained agitated. Because of the risks of serious injury if his agitation was untreated and of further benzodiazepine use outside a critical care area (the ward to which he was admitted has a patient:nurse ratio of 8:1), he was treated with 1 mg of phystostigmine. This was immediately and dramatically followed by a period of complete lucidity lasting 90 minutes. He did not become agitated again and his confusion resolved fully after a further 16 hours. Referral to an ITU was considered but it was felt that the risks of paralysis, intubation and ventilation (and the possible need for interhospital transfer) outweighed those associated with phystostigmine treatment. This latter option had the advantage of therapeutic and diagnostic potential.

Procyclidine is an antimuscarinic drug with a half life of 8 to 16 hours. When taken in overdose the features of anticholinergic toxicity may be delayed.1 His agitation was unlikely to be attributable to amisulpride as this is a D2/D3 receptor antagonist but the patient had no signs of extrapyramidal side effects.2 Phystostigmine is a tertiary ammonium compound that reverses anticholinergic effect via acetylcholinesterase inhibition. Uniquely, for this class, it crosses the blood-brain barrier. It has a rapid onset of effect and duration of action of one to two hours.3 We do not propose that phystostigmine be routinely used to treat changed mental status after poisoning. We do, believe, however, that it has a very specific role in the treatment of patients with persisting central anticholinergic toxicity despite sedation with benzodiazepines.

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Emergency medicine or accident and emergency?

Editor—What is emergency medicine? Is it the specialty that provides “The care of emergency patients . . . by specially trained doctors who deliver a wide range of services for all patients presenting to a separate emergency department” including “The initial assessment and early treatment in resuscitation, trauma, medical and paediatric emergency” and “acute care of patients” in its widest context including medicine, surgery, anaesthesia, paediatrics (and) psychiatry”4? Or is it a subspecialty of general medicine responsible for the assessment and admission of acute adult medical conditions?

The Royal College of Physicians has named the latter “acute medicine”, yet confusion about the distinction remains. I have reviewed 10 successive editions of BMJ Classified (14 October 2000 to 16 December 2000) in order to identify all job advertisements for “emergency physicians” or doctors to work in “emergency medicine”. Further study of the advertisements allowed me to establish which of these posts were to work in (accident and) emergency departments and which to work in medical assessment/admission units and/or general medicine (table 1).

<table>
<thead>
<tr>
<th>Accident and General emergency medicine</th>
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<tbody>
<tr>
<td>Consultant</td>
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<td>Non-emergency career grade</td>
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The results of this study show that the majority of positions in “emergency medicine” (11 versus 6) are in fact to work in acute general medicine.

I believe that it is now time for our speciality to adopt the name emergency medicine, to bring us in line with our colleagues in the USA, Canada, Australia, New Zealand and the Far East. If we do not, we are in danger of losing the title altogether to a subspeciality of general medicine. If this were to happen, we would be stuck with “A&E” which, along with its predecessor “casuistry”, belong firmly in the last millennium.

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Intranasal diamorphine in adults

Editor—We would like to describe a patient who benefited from intranasal diamorphine administration. This route has become an acceptable way of providing analgesia for children in severe pain. We believe it is also an acceptable and potentially important route for adults. It is rapidly absorbed from the venous plexi of the nasal mucosa and provides less variable pain relief than rectal or oral routes. Its aqueous solubility allows the use of small volumes.1

We recently used intranasal diamorphine as pain relief in a 57 year old woman. This woman suffered from chronic renal failure, and underwent frequent dialysis. She had fallen onto her right hand. Her right elbow was tender, swollen and deformed. She was supporting this elbow with her uninjured forearm. This combined with an arteriovenous shunt in the left arm made venous access difficult. She was crying out in pain and severely distressed. To allow immobilisation and investigation she was given intranasal diamorphine, at a dose of 0.1 mg/kg. This gave immediate pain relief. Radiographs...

LETTERS TO THE EDITOR
Takeda controlled trials comparing chronic positive cated. In addition to the three randomised treatment of acute pulmonary oedema also and mortality. The need for intubation, length of hospital stay obstructive airways disease—with regard to treatment of acute exacerbation of chronic that this treatment is beneficial in the have used intranasal diamorphine on several occasions. During its use we monitor vital signs. Pain scores or direct questioning measures its efficacy. We believe that a prospective study of its use would permit identification of potential side effects or complications. It is our experience that these do not occur. Our experience is insufficient to identify any cause and vomiting would be a significant problem.

We feel it is an important adjunct in certain clinical situations and a valuable addition to pain management.

The role of non-invasive ventilation in the emergency department

EDITOR—Anthony Cross highlighted the effectiveness of non-invasive ventilation (NIV) in the emergency department in his review. As he concluded, studies certainly indicate that this treatment is beneficial in the treatment of acute exacerbation of chronic obstructive airways disease—with regard to the need for intubation, length of hospital stay and mortality.

The evidence for the use of NIV in the treatment of acute pulmonary oedema also exists, and is stronger than Dr Cross indicated. In addition to the three randomised controlled trials comparing chronic positive airway pressure (CPAP) with standard treatment of acute pulmonary oedema identified in the review, there also exists an article by Takeda et al. from Tokyo. If the results of this study are pooled with the three reviewed by Cross, the overall risk reduction for mortality becomes −13.8% (95% CI −24.2 to −3.4%).

Further to this, the three trials of continuous positive airway pressure (CPAP) for the treatment of left ventricular failure (LVF), quoted by Cross, have been the subject of a systematic review. This combined the data and found a significant reduction in intubation rates for those receiving CPAP (NNT=5) and a non-significant trend towards decreased mortality.

There are however issues that have not yet been resolved. The one trial comparing CPAP with bi-level positive airway pressure (BiPAP) in patients with LVF was terminated early because of a high rate of myocardial infarction in the BiPAP group. The BiPAP group contained more patients with chest pain and known coronary artery disease. They also had higher mean creatinine kinase, and lower mean pH and PaO₂ at enrolment. As Cross reports, these differences between the two groups did not achieve statistical significance, but there was a trend towards worse baseline variables in the BiPAP group. With only 27 patients in this study the possibility of a type 2 error also exists. Further trials are needed to determine the role of BiPAP in the treatment of LVF.

Two of the three studies of CPAP in LVF excluded hypertensive patients. CPAP may increase cardiac output in patients with cardiac failure, and further study is needed to confirm its safety in these patients.

In our department we treat patients with respiratory distress using CPAP for LVF and BiPAP for exacerbations of COPD. Patients who are unable to cooperate or require immediate intubation are excluded. With the use of fully portable equipment NIV is a simple technique, which has the potential to benefit many emergency department patients, and we welcome the attention drawn to this by the review article.

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EDITOR—We read with interest the review by Cross of the use of non-invasive ventilation (NIV) in the emergency department. We have appraised the evidence concerning the effectiveness of NIV in acute respiratory failure and found further evidence that both supports its use and highlights current controversies.

Although Cross comments on individual studies having a low power, a meta-analysis of trials using NIV in patients with acute respiratory failure. By combining the data in these trials the results achieve significance. Patients with chronic obstructive pulmonary disease (COPD) treated with NIV had reduced intubation rates with a number needed to treat (NNT) of three and reduced mortality with an NNT of five.

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Letters, Book reviews, Correction, Notices

1 Wilson JA, Kendall JM, Cornelius P. Intranasal diamorphine for paediatric analgesia: assess-
2 Sandhu S, Driscoll P, Nancarrow J, 
3 Pang D, Keenan SP, Cook JD, et al. The e
5 Motta S, Jay GD, Wolkme
6 Pang D, Keenan SP, Cook JD, et al. The e

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This is the first time that pooled results have shown that CPAP treatment for heart failure, in decreasing intubation rates, also decreases mortality—at least in the short-term (only two of the studies included long term follow up). There is also evidence that CPAP treatment benefits are greater in those with increasing severity of pulmonary oedema. We believe that a prospective study of its use would permit identification of potential side effects or complications. It is our experience that these do not occur. Our experience is insufficient to identify any cause and vomiting would be a significant problem.

We feel it is an important adjunct in certain clinical situations and a valuable addition to pain management.
trials in which the intubation rate for the con- 
trols is usually very high (up to 74% in studies of COAD patients' and up to 60% in those with patients presenting with acute pulmonary oedema). It is almost inevitable that NIV will reduce the intubation rate when the rate is already so high in the controls. In our audit in A&E departments in Leeds, only 11% of severe acute pulmonary oedema patients (res- piratory rate >23/min and pH <7.35) were intubated after the usual therapy for this condition. It is much less likely that NIV, in the A&E department, would reduce this low intu- bation rate significantly.

Cross also suggests that “early intervention [with NIV] may avoid the risks and complica-
tions of endotracheal intubation.” There is no doubt that the complication rate has been shown to be reduced by NIV in published 
tions of endotracheal intubation”. There is no

A&E departments in Leeds, only 11% of 
patients presenting with acute pulmonary 
related to increased mortality in those treated 
with NIV has been shown and attributed to 
delays in intubation. It is important, there- 
fore, to point out that NIV is not a substitute for intubation but may delay or prevent it becoming necessary in a carefully selected group of patients.

Two other points not discussed in the review are also important. Firstly, like every- thing else in A&E practice, there are training issues when new or unfamiliar 
techniques, such as NIV, are used. Both 
doctors and nurses need to know when and 
how to use particular equipment and, perhaps 
more importantly, when not to. In particular 
they need to be fully trained in all the possible complications of NIV. A&E staff may not use 
the technique regularly and so skills will 
decay without proper training schemes in place.

Secondly, many of the NIV machines 
currently on the market do not come with a 
battery pack, and this may present difficulties 
when transfer to the ward or intensive care is 
required by a patient who has been started on NIV in an A&E department. Some patients 
(particularly those with COAD) will have a 
prolonged requirement for NIV and it is, 
therefore, important to consider investing in 
an NIV machine that can run from a battery.

In summary, most patients presenting to 
A&E with respiratory distress do not need 
ventilatory support. For those that do, 
endotracheal intubation and mechanical ventila-
tion remains the gold standard. For a small 
group of patients with chronic lung disease 
needing urgent ventilatory support, NIV may 
be first line treatment. Chronic positive airway pressure 
undoubtedly has a role in patients with acute pulmonary oedema.

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M W ELLIOTT
Consultant Respiratory Physician,
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BOOK REVIEWS


The authors set out to assist the reader in understanding what they call “the science and Gestalt of critical care medicine”. I take this to mean that the clinical formulation should be determined by interpretation of clinical data in the appropriate context, taking account of any technical and other confounding vari-
abes. These aims are equally appropriate to 
emergency medicine but I’m not sure that 
they are achievable in a book of this size and 
type.

The format is a familiar one; questions are 
posed on one side of the page with answers 
and explanations offerleaf. The quality of the images is above average and the subject matter is not overly esoteric. Answers are commend-
ably brief and informative, allowing a wide 
range of material to be covered fairly quickly, 
though not in great depth.

Accessible is the best way to describe this 
book, light reading in quiet moments before 
postgraduate examinations in critical care, 
anesthesia or accident and emergency medi-
cine. When junior doctors wore white coats it 
would have been crammed into a manila 
filed pocket. Nowadays it will reside instead 
in numerous clinical areas or languish on a 
bedside table in the on call room. I recommend 
that if you come across it you should pick it up 
and have a read.

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When I picked up *Trauma care I was expecting 
another run of the mill text on “how to resus-
citate the multiply injured”. This expectation 
was shaken when the book fell open on the 
chapter “nourishment”. Now I know waiting 
times in A&E are long, but surely no one was 
advocating taking the breakfast trolley into 
“resus”? All was revealed however as I read 
through the book. A text outlining the delivery of optimum 
trauma care from the moment of injury to the 
re-integration of the patient into the commu-
nity. The approach is fresh and is enhanced by 
the use of case studies to illustrate the points 
being made. The most compelling thing is that 
a large amount of the book seems to be written 
from the perspective of the patient—the 
patient’s experience, the patient’s needs.

The chapters that focus on the psychological 
effects of trauma are perhaps the most sober-
ing, but other elements of care that are impor-
tant to the patient are also covered—elimination, tissue viability, hygiene and 
mouth care to name but a few. But don’t be fooled into thinking that this is purely a nurs-
ing textbook—the contributors come from all 
disciplines involved in the care and rehabilita-
tion of the trauma patient, with many teams 
members writing their own chapters in the 
book. The book is made complete with consider-
tations in the final section of the actual service delivery and the staff that work within the 
service.
This book has succeeded in making me rethink my often narrow approach to trauma care, and I have set myself the task of recommending it to all the areas within the hospital that have contact with “trauma patients”. I hope that if I ever have the misfortune to be seriously injured I am looked after by people who have a similar patient orientated approach.

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CORRECTION

Mr R A Simpson should have been acknowledged as a scan coordinator for the Journal scan that appeared in the January 2001 issue of the journal (2001;18:71–3).

NOTICES

15th Annual Trauma Anesthesia and Critical Care Symposium
23–25 May 2002, Stavanger, Norway
Further details: e-mail: congress-secretary@traumacare2002.com, web site: www.traumacare2002.com, tel: +47 51 74 91 02, fax: +47 51 74 70 02.

18th Annual Scientific Meeting of the Australasian College for Emergency Medicine
30 September to 4 October 2001, Hobart, Tasmania
Further details: the programme of the meeting and details of how to register are at the web site www.cdesign.com.au/acem2001

World Congress on Drowning
26–28 June 2002, Amsterdam, the Netherlands
Further details: Congress Secretariat World Congress on Drowning 2002, Consumer Safety Institute, PO Box 75 169, 1070 Amsterdam, the Netherlands (tel: +31 20 511 45 14, fax: +31 20 511 45 10, e-mail: Secretariat@drowning.nl, web site: www.drowning.nl).

Books received