JOURNAL SCAN

Journal scan

Edited by Jim Wardrope; this scan coordinated by Philip Davies and Anthony Mattick

Amiodarone for resuscitation after out-of-hospital cardiac arrest due to ventricular fibrillation

P Kudenchuk, L A Cobb, M Copass, *et al*
N Engl J Med 1999;341:871–8

Overview—The role of antiarrhythmic drugs in resuscitation after out-of-hospital cardiac arrest has not been determined in randomised controlled trials. The authors conducted such a study looking at the efficacy of amiodarone in such circumstances.

Design—A randomised double blind, placebo controlled trial. Patients who had a cardiac arrest with ventricular fibrillation (or pulseless ventricular tachycardia) and who had not been resuscitated after three or more precordial shocks were randomly assigned to receive 300 mg of amiodarone (246 patients) or placebo (258 patients). Before administration of the study vial the patients were intubated, intravenous access obtained, and 1 mg of adrenaline (epinephrine) given intravenously. Thereafter the patients received standard care en route to hospital whatever group they were assigned.

Outcome measures—The primary end point was admission to hospital with a spontaneously perfusing rhythm.

Results—Recipients of amiodarone were more likely to survive to hospital (44% compared with 34% of the placebo group, $p=0.03$). The benefit was consistent among all subgroups and at all times of drug administration. There was little difference between the groups in patients surviving to hospital discharge.

Conclusion—Patients with out-of-hospital cardiac arrest due to refractory ventricular arrhythmias who were treated with amiodarone had a higher rate of survival to hospital admission.

Critique—The study looked at an important and specific question that had not been tested by a randomised controlled study. A large number of patients (504) were analysed in the trial with similar clinical profiles in both groups. However, a further 160 patients were initially eligible but not entered into the analysis. These included patients who were successfully cardioverted before the study drug could be given. Such exclusions were clearly acceptable. However, no numbers are given of exclusions because of “technical problems and protocol violations”. In three eligible cases the study vials were subsequently lost and could therefore not be entered into either group. Finally 5% of those analysed did not have a

record of ventricular fibrillation or pulseless ventricular tachycardia >150 beats per minute.

The study was well blinded throughout the initial treatment and the patients’ hospital stay. Care after reaching the hospital was not standardised and would thus probably involve many variables, not analysed in the study.

Despite these factors the paper is a significant addition to the evidence in the role of amiodarone in out-of-hospital cardiac arrest. The authors say that the study did not have sufficient statistical power to show any benefit for survival to hospital discharge. However there was so little difference between the groups it may be that the major determining factor in long term survival in out-of-hospital cardiac arrest is still early defibrillation.

The role of ipratropium bromide in the emergency management of acute asthma exacerbation: a metaanalysis of randomized clinical trials

R G Stoodley, S D Aaron, R E Dales
Ann Emerg Med 1999;34:8–18

Overview—Although β_2 agonists are known to have benefit in the treatment of acute asthma, there is less evidence that ipratropium bromide offers additional advantages over this standard treatment.

Design—Meta-analysis of trials comparing use of ipratropium bromide as an adjuvant treatment in the treatment of patients with an acute exacerbation of asthma.

Method—A comprehensive literature search was carried out to identify all randomised, placebo controlled trials assessing the effect of inhaled ipratropium when added to β_2 agonists in adult emergency patients with an exacerbation of asthma. Databases were searched using a detailed search strategy. Further studies were identified by screening reference lists and contacting the pharmaceutical companies. Two authors independently screened trials for inclusion and weighted each trial for quality of randomisation and blinding. The primary outcome was the change in peak expiratory flow or forced expiratory volume in one second over the first 30–90 minutes of treatment.

Results—Ten randomised controlled trials were identified and included. All trials were double blinded.

Conclusion—Addition of ipratropium to standard treatment of β_2 agonists results in a modest but statistically significant rise in peak expiratory flow.

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Critique—This study is well designed when judged against criteria for evaluating systemic reviews. The search strategy is clearly described and has been applied to six electronic databases. The reviewers have attempted to minimise publication bias by contacting pharmaceutical companies to identify unpublished trials, although trial authors were not contacted for information about unpublished data. Inclusion criteria are clearly stated. Selection and grading of the trials was undertaken independently by two authors, and the level of agreement is acceptable. There is some concern about the heterogeneity of the trials. The authors address this issue, and attribute it to the effect of one trial. The conclusions that ipratropium has a role in the treatment of acute asthma are generally supported by the results of the review. The paper unfortunately does not attempt to address the issue of whether the use of this combined treatment has any effect on mortality, length of stay in the emergency department and hospital, or possible discharge of patients, although the accompanying editorial suggests that it would be necessary to treat 20 patients to avoid one hospitalisation.

A comparison of standard cardiopulmonary resuscitation and active compression-decompression resuscitation for out-of-hospital cardiac arrest

P Plaisance, K Lurie, E Vicaut, *et al*
N Engl J Med 1999;341:569–75

This study reports the one year survival in 750 patients with out-of-hospital cardiac arrest randomised to receive standard cardiopulmonary resuscitation (S-CPR) or the active compression-decompression (ACD-CPR) technique. There were 17 survivors in the ACD-CPR group and seven in the S-CPR group. This difference was significant. However there were significant baseline differences between the groups, perhaps most surprising a very much longer time to start of the CPR for advanced life support in the ACD-CPR group. The study also differed to most studies of out-of-hospital cardiac arrest with almost half the survivors having an initial rhythm of asystole. Indeed the most marked difference between the groups was in patients with asystole.

Other studies have failed to find a survival benefit from ACD-CPR but this study suggests there may be benefit, especially for patients in asystole. More evidence is needed.

Hyperbaric oxygen did not reduce persistent neurological sequelae of carbon monoxide poisoning

R M Schapira
Evidence-Based Medicine 1999;4(July-August): 124.

This is a summary and appraisal of a randomised controlled trial of 191 patients with carbon monoxide poisoning.¹ Two groups of patients were either treated with normobaric or hyperbaric high concentration oxygen. There was no difference between the groups in

terms of neurological sequelae. While this paper may challenge the treatment policies of a recent review article in this journal,² it should be noted that follow up of patients was only for one month with a 49% review rate.

- 1 Scheinkestel CD, Bailey M, Myles PS, *et al*. Hyperbaric or normobaric oxygen for acute carbon monoxide poisoning: a randomised controlled trial. *Med J Aust* 1999;170:203–10.
- 2 Turner M, Hamilton-Farrell MR, Clark RJ. Carbon monoxide poisoning: an update. *J Accid Emerg Med* 1999;16:92–6.

Single-bolus tenecteplase compared with front-loaded alteplase in acute myocardial infarction: the ASSENT-2 double-blind randomised trial

Assessment of the Safety and Efficacy of a New Thrombolytic (ASSENT-2) Investigators
Lancet 1999;354:716–22

This randomised controlled trial compares alteplase with tenecteplase, a new generation single bolus thrombolytic agent. The trial is well powered and has good design features. A comparison between 16 000 patients demonstrates equivalence between tenecteplase and alteplase in its primary outcome measure of all cause 30 day mortality. The paper supports the role of tenecteplase as a possible treatment of acute myocardial infarction. Because of its ease of administration the possibility is raised of using tenecteplase as a rapid pre-hospital thrombolytic.

Home-made spacers for bronchodilator therapy in children with acute asthma: a randomised trial

H J Zar, G Brown, H Donson, *et al*
Lancet 1999;354:979–86

This study sets out to compare the efficacy of home made spacers (500 ml plastic bottle, polystyrene cup) compared with a conventional spacer for treatment of acute asthma in children. Although the study numbers are small, the results suggest that a conventional spacer is better than home made. Doctors managing children in the pre-hospital setting without a normal spacer would be advised to use a sealed 500 ml bottle as the best alternative.

Crying significantly reduces absorption of aerosolised drug in infants

R Iles, P Lister, A T Edmunds
Arch Dis Child 1999;81:163–5

Fifteen infants, eight with resolving chronic lung disease and seven with normal birth histories, were given sodium chromoglycate via a nebuliser. During this the infants were graded as distressed or settled. The urine of the infants was collected to measure the degree of drug absorption, as 43% of the drug is excreted by the kidney. It was found that a mean of 0.43% of the total nebulised drug was excreted in the urine of the settled group compared with 0.11% of the total drug in the group who were distressed. No association was found between drug absorption and degree of lung damage. They conclude that nebulised drugs are absorbed more in settled infants.

Hospital-at-home care was at least as effective, safe, and acceptable as hospitalisation for older adults

M P Martin

Evidence-Based Medicine 1999;4(July-August): 114.

This paper¹ compares the treatment of 100 elderly patients either at home, or in a hospital setting. All patients entered into the trial would conventionally have been treated in a hospital setting. Both groups were well matched and presented with a broad spectrum of illness. Patients treated at home were more satisfied with their treatment and suffered fewer complications, such as confusion and falls. Hospital at home care has implications for patient satisfaction. However as no economic analysis is included in the study it is impossible to comment on its cost effectiveness in the avoidance of emergency admissions.

¹ Caplan GA, Ward JA, Brennan NJ, *et al.* Hospital in the home: a randomised controlled trial. *Med J Aust* 1999;170: 156–60.

Oral versus initial intravenous therapy for urinary tract infections in young febrile children

A Hoberman, E R Wald, R W Hickey, *et al*
Pediatrics 1999;104:79–86

A multicentre randomised trial comparing intravenous, hospital administered with oral, community administered antibiotics for children with urinary tract infections. There was no difference in primary outcome measures of relief of symptoms, reinfection rate, and extent of renal scarring at six months in the 306 patients entered into the study. This study again has important implications for admission avoidance policies in a different age group to the previous paper. The use of third generation cephalosporins as first line treatment for urinary tract infections may be questioned in the UK.

Immersion deaths and deterioration in swimming performance in cold water

M Tipton, C Eglin, M Gennser, *et al*
Lancet 1999;354:626–9

General hypothermia is implicated in immersion related deaths, although many deaths occur too quickly to allow a major drop in core

temperature. The authors studied the swimming characteristics of 10 volunteers in water of 25, 18, and 10°C to ascertain if cold could lead to “swim failure” and be linked to drowning. From the parameters measured it was found that swimming efficiency and stroke length decreased whereas stroke rate and swim angle increased in 10°C water compared with the warmer temperatures. The changes in swimming motion seemed to characterise impending “swim failure”. They conclude that treatment should be aimed at symptoms resulting from near drowning rather than hypothermia.

Double-blind, randomized study of nalmefene and naloxone in emergency department patients with suspected narcotic overdose

J Kaplan, J Marx, J Calabro, *et al*
Ann Emerg Med 1999;34:42–50

The study compared the efficacy, safety and withdrawal symptoms that occur when treating patients with suspected narcotic overdose with either nalmefene or naloxone. Nalmefene is an opioid antagonist with a longer duration of action (4–10 hours) than naloxone and thus has theoretical advantages. The effect of the drugs was assessed using parameters such as respiratory rate and neurobehaviour assessment scale and opioid withdrawal scale scores for the first four hours. They concluded that naloxone (2 mg) and nalmefene (1 mg and 2 mg) appeared safe, efficacious, and yield similar clinical outcomes in this type of patient.

Dogs bite bones too—a tale of fractures in adult hands

A Aslam, J C Dickinson
Injury 1999;30:374–6

This series of case reports serves as a reminder that emergency physicians should have a high index of suspicion of underlying fractures in patients presenting with dog bites to the hand. Suspicion should be especially high in those patients bitten by large dogs!