

## JOURNAL SCAN

## Journal scan

Edited by Jim Wardrope; this scan coordinated by John Richards

**Inhaled budesonide in addition to oral corticosteroids to prevent asthma relapse following discharge from the emergency department**

B Rowe, G Bota, L Fabris, *et al*

*JAMA* 1999;281:2119–26

**Aims**—To determine whether the addition of inhaled corticosteroids to oral corticosteroid treatment reduces relapses in acute asthma patients treated and discharged from the emergency department.

**Design and setting**—Prospective, randomised, placebo controlled, double blinded clinical trial, in a community hospital emergency department in Canada.

**Patients and methods**—Patients between the ages of 16 and 60 years with a clinical diagnosis of acute asthma considered suitable for home discharge were referred for assessment for enrolment. Enrolled patients were randomly assigned in a double blinded fashion to either the treatment group (inhaled budesonide two puffs twice a day for 21 days), or to the control group (identical placebo two puffs twice a day for 21 days). All patients were discharged with a non-tapering course of oral prednisolone. Patients were followed up until relapse or for 21 days.

Exclusion criteria included recent oral or inhaled corticosteroid treatment, complicating comorbid medical illnesses, pregnancy, breast feeding, attending for repeat scripts, geographically inaccessible, language/communication problems, first diagnosis of asthma, already enrolled in the study, pretreatment peak expiratory flow >80% of predicted for age, sex, height.

**Outcome measures**—Primary outcome measured was incidence of relapse within 21 days, defined as an unscheduled visit for worsening asthma symptoms. Secondary outcomes measured included responses to an asthma quality of life questionnaire, frequency of  $\beta_2$  agonist use in the previous 24 hour period, symptom scoring by patients, global improvement assessment by patients, and pulmonary function testing of patients.

**Analysis**—Primary analyses were based on an intention to treat principle. Time to relapse was analysed using a Kaplan-Meier survival curve and the log rank test. Baseline patient variations (age, sex, severity) were adjusted for using logistic regression. The secondary analyses used *t* tests for continuous, normally distributed results and  $\chi^2$  test for categorical variables.

**Results**—A total of 1006 consecutive patients attended with acute asthma and 188 were enrolled; 94 were allocated to each arm of the trial. After 21 days 12/94 (12.8%) patients in the budesonide group had experienced relapse, compared with 23/94 (24.5%) patients in the placebo group, a relative relapse reduction of 48% ( $p = 0.049$ ). This yielded a number needed to treat of nine, to prevent one relapse. Five patients in the budesonide group and three in the placebo group either dropped out or were lost to follow up, but were included in the primary analyses. With regard to secondary outcome measures, the budesonide group demonstrated statistically significant better results in all but the pulmonary function testing, at 21 days.

**Conclusions**—Patients discharged from the emergency department after treatment for acute asthma will further benefit from additional treatment with (high dose) inhaled budesonide for 21 days, compared with oral corticosteroid alone. In this study the results of the primary outcome measure were corroborated by those of the secondary outcome measures.

**Critique**—This study addresses an issue of clinical importance to patients, to primary care doctors (especially in rural settings), and to emergency department physicians. A specific question is posed and the study design is appropriate to the broad field of research (a comparison of therapies).

An important point of originality for this study is the substantial length of follow up allowed for a sample of patients having suffered acute asthma. This period (three weeks) allows for comprehensive detection of relapses and for return to a stable state.

A power calculation performed before the study identified that approximately 180 patients would be needed to show a difference between the groups. A large number of patients were excluded from the study with less than 20% of patients being included. Details of the reasons for exclusion are not given. This may make the findings less generalisable to the whole asthma population.

The diagnosis of acute asthma for this study was largely only on clinical grounds, by the attending physician. Although this may have resulted in some non-asthmatic patients being included, this approach probably mirrors diagnostic criteria in everyday practise. There were some variations in baseline characteristics of study patients (age, sex, severity were more

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severe in the budesonide group) and analyses were adjusted by logistic regression.

Outcome measures were concisely defined. "Relapse" as used in this study was possibly subject to interpatient variability, but nevertheless was clinically important to both patients and physicians.

In summary, this article is presented as a relevant and valid project of research and in the light of its conclusions it mentions further areas of investigation for improving patient care.

It is not current UK policy to prescribe combined steroids to patients with acute asthma who are discharged. This study may indicate a need to review these policies.

### Significance of vomiting after head injury

P Nee, J Hadfield, D Yates, *et al*

*Journal of Neurology Neurosurgery and Psychiatry* 1999;66:470-3

**Overview**—Skull radiography to detect skull vault fractures remains a principle triage tool for determining which patients should be admitted for observation or referred for computed tomography examination. Referral for skull radiography is based on guidelines, whose criteria are neither entirely sensitive or specific. The role of post-traumatic vomiting remains unclear.

**Objectives**—To determine whether the presence and severity of post-traumatic vomiting can predict the risk of skull vault fracture, in both adults and children.

**Design and setting**—A data analysis (cross sectional survey), performed on a consecutive series of adult and paediatric patients with a principle diagnosis of head injury (defined), presenting to an inner city emergency service in Salford, UK, over a one year period.

**Methods**—By means of a clinical proforma, documentation was made for all patients' presenting characteristics: age, sex, speed of impact (high, medium, low), level of consciousness on arrival, presence of post-traumatic amnesia, presence of nausea, presence and frequency of vomiting, presence of skull fracture. As complete a record as possible was obtained on the outcome of all patients by following up data on reattendances, complications, etc. The only reason for exclusion was insufficient documentation. More detailed data of this series of patients has been previously published.<sup>1</sup>

Because of the small incidence of skull fractures, relative risks of fracture with 95% confidence intervals were estimated from odds ratios computed using standard multiple logistic regression methods. Fracture incidence rates were calculated according to the above mentioned presenting characteristics. Separate analyses were performed for adults and children.

**Results**—Data were collected on 5416 patients: 2581 (48%) were children under 16 years of age. One hundred and six (2%) of all patients had radiologically diagnosed vault fractures. Fifty patients had insufficient documentation of post-traumatic vomiting. Overall incidence of vomiting was 7% in adults and 12% in chil-

dren. Incidence of vomiting in fracture patients was 28% in adults and 33% in children. Sensitivity, specificity (and positive and negative predictive values) for vomiting were 28%, 93% (and 7%, 98%) for adults and 33%, 88% (and 5%, 98%) for children. Vomiting was associated with an approximate fourfold increase in risk of skull fracture. Nausea alone did not increase the risk and multiple episodes of vomiting were no more significant than a single episode. The presence of vomiting increased the risk of fracture irrespective of other presenting characteristics. There was no significant difference between adults and children.

**Conclusions**—The results indicate that a question about vomiting in the guidelines for requesting skull radiography would increase guidelines' sensitivity.

**Critique**—The study addresses a question already investigated quite extensively, but with no clear cut conclusions.

In a previous publication it is stated that 2933 (54.2%) of the 5416 patients in this series underwent skull radiography (the "gold" standard).<sup>1</sup> The incidence of skull fracture in the remaining patients would presumably be extremely low and statistical analysis in this study was on this basis.

The introductory section emphasises the importance of needing high levels of sensitivity and specificity for any triage criteria for skull radiography. Despite the higher relative risks of skull fracture in patients who vomit, vomiting as a "test" does not meet these high levels in all regards. Vomiting is mentioned in guidelines as an indication for skull radiography,<sup>2</sup> and the evidence from this study is that one vomit is as important as repeated vomiting and that this applies to children as well as adults. Is it your practice to x ray a child who vomits once after a head injury?

1 Nee P, Hadfield J, Yates D. Biomechanical factors in patient selection for radiography after head injury. *Injury* 1993;24:471-5.

2 Royal College of Surgeons of England. *Report of the working party on the management of patients with head injuries*. London: Royal College of Surgeons of England, 1999.

### Planning for major incidents involving children by implementing a Delphi study

K Mackway-Jones, S Carley, J Robson

*Archives of Disease in Childhood* 1999;80:410-13

This document gives practical advice on how general guidelines from the Delphi study can be implemented at regional, local hospital, and pre-hospital levels. Various aspects are covered including preparation (planning, equipment, training matters), medical management (command and control of the response), delivery of medical support (triage, treatment, transport and transfer issues), and recovery period (including audit).

Emphasis is placed on secondary/tertiary hospital coordination, and the concepts of paediatric assessment teams and paediatric transfer teams are highlighted.

### **Intra-articular lignocaine versus Entonox for reduction of acute anterior shoulder dislocation**

A Gleeson, C Graham, A Meyer

*Injury* 1999;**30**:403–5

This small, prospective randomised trial addresses the dilemma surrounding the most efficient method of analgesia for shoulder reduction, and looks to compare the effects of Entonox versus intra-articular lignocaine. Using verbal pain score reports, more statistically significant improvements in scoring are achieved with Entonox, and the conclusions reached are that Entonox is superior to lignocaine in this situation.

### **Pre-hospital adult intraosseous infusion**

M Lavis

*Pre-hospital Immediate Care* 1999;**3**:89–92

This case report study presents four scenarios of adult intraosseous infusions performed via the anterior iliac crest when other methods of intravenous access have failed.

Notwithstanding conventional arguments against adult intraosseous infusion, the author promotes its potential immense value in the not uncommon pre-hospital situations of critically ill or injured patients requiring urgent fluids or drugs, either trapped in hostile environments or facing prolonged pre-hospital journey times, and where peripheral cannulation has failed. The technique merits consideration for inclusion in pre-hospital resuscitation training courses.

### **Right ventricular involvement in acute myocardial infarction**

M Burgess, S Ray

*Hospital Medicine* 1999;**60**:430–4

This concise review article serves to remind us of the importance of recognising right ventricular dysfunction in acute inferior infarction, in view of its implications for treatment and prognosis. The diagnosis should be suspected by raised ST segments seen in the right sided rather than left sided precordial leads, and confirmed by echocardiography.

Recognition is important, firstly to avoid often inappropriate (diuretic/vasodilator) therapy, and also for realising that cardiogenic shock is often largely reversible in such patients.

### **The incidence of nerve injury in anterior dislocation of the shoulder and its influence on functional recovery**

C Visser, L Coene, R Brand, *et al*

*Journal of Bone and Joint Surgery (British)* 1999;**81**:679–85

This prospective observational study serves to remind us of the relatively high incidence of nerve injury in anterior dislocation of the shoulder.

A clinical and electrophysiological (EMG) evaluation of 77 patients is performed and axonal loss is found in 48% of cases, with the axillary nerve effected in 42% of cases. Nerve recovery takes place in 12–45 weeks and is almost always complete or near complete, as judged by clinical (muscle strength) and EMG. Functional range of movement, however, often remains significantly impaired, and the importance of a suitable course of physiotherapy for all patients is emphasised.

### **Effects of tissue plasminogen activator for acute ischaemic stroke at one year**

T Kwiatkowski, M Richard, B Libman, *et al*

*New England Medical Journal* 1999;**340**:1781–7

This study takes further the work in 1995 of the National Institute of Neurological Disorders and Stroke (NINDS) stroke study, when acute ischaemic stroke patients treated promptly with recombinant t-PA were found to have significantly less disability at three months compared with placebo patients. In this study eventual outcome data for the 624 NINDS trial patients are collected over 12 months. Primary outcome measure is a “favourable outcome” using three disability scales. The favourable results of t-PA patients are shown to be sustained at six months and at 12 months.