

## JOURNAL SCAN

## Journal scan

Edited by Jonathan Wyatt; this scan coordinated by Rakesh Khanna

**Risk of intracranial haemorrhage with bolus versus infusion thrombolytic therapy: a meta-analysis**

S R Mehta, J W Eikelboom, S Yusuf

*Lancet* 2000;356:449-53

**Objectives**—To determine whether there is an increased risk of intracranial haemorrhage (ICH) if thrombolytic agents are administered as boluses in patients with acute myocardial infarction.

**Method**—A meta-analysis of randomised trials comparing bolus and infusion thrombolytic therapy. Data pertaining to ICH and also non-haemorrhagic stroke, reinfarction rates and 30 day mortality were also subject to meta-analysis.

**Results**—A total of seven trials involving more than 100 000 patients were identified for inclusion in the meta-analysis. Bolus treatment was found to be associated with a greater risk of ICH (0.8% v 0.6%; odds ratio 1.25 (95% CI 1.08, 1.45); p=0.003). The authors calculated that this translated to an absolute excess of two ICHs per 1000 patients treated. This increased risk was not offset by any decrease in 30 day mortality, reinfarction or non-haemorrhagic stroke, which did not significantly differ between the two techniques.

**Conclusions**—Although bolus administration may be more convenient, this must be balanced against an increased risk of ICH. Given that the convenience of bolus administration of thrombolytic therapy in hospital practice is of limited value, there is little justification in using this technique.

**Critique**—The authors identified 43 randomised controlled trials comparing bolus with standard infusion of thrombolytic therapy by electronic and manual searches. After using a structured exclusion process seven trials were identified for inclusion in the meta-analysis. However, the trials analysed were not entirely homogenous in terms of the original methodologies used. Two trials compared the same bolus and infusion agents, whereas the other five compared different agents. Four of the trials studied were double blinded and three were open labelled. Despite these differences in study design, all of the trials did study very similar population groups. The lines of the confidence limits for the incidence of ICH of the seven trials analysed overlap, so in this respect the trials are statistically homogenous. The lines of the confidence limits for the other parameters studied (non-haemorrhagic stroke,

reinfarction and mortality) are not given so statistically homogeneity cannot be confirmed, but study of the raw data presented suggests that they are homogenous. No mention was made of the incidence of other possible complications such as hypotension and allergic reactions.

Despite some limitations, this study probably represents the best available evidence at the present time on this very relevant topic. The data provide a strong case for avoiding the bolus administration of thrombolytic agents in the treatment of acute myocardial infarction—a recommendation worthy of careful consideration.

**Evaluation of unstable cervical spine injury: a six year experience**

K Brohi, J Wilson-Macdonald

*J Trauma* 2000;49:76-80

The authors present the results of a mixed retrospective (1992-94) and prospective (1994-98) study into the characteristics of 100 consecutive patients who underwent operative fixation or stabilisation of cervical spine injuries at a tertiary spinal injury centre. The study showed two peaks of cervical injuries at C2 and C5/C6 levels. There was a delay of over 24 hours in the diagnosis of 22 patients, but 13 of these delays were attributable to a failure to present to any hospital. In 10 patients (presenting initially to another hospital) the injury was missed on first presentation. In all 10 cases, this was attributed to a failure in obtaining plain cervical spine radiographs.

Once at the study centre, a complex algorithm was applied to all patients. This algorithm used the liberal use of computed tomography, medically supervised dynamic fluoroscopy, flexion-extension views and magnetic resonance imaging. Despite the use of this extensive investigative process, two unstable cervical spine injuries were missed none the less! The authors did note that no conscious patient with an unstable cervical spine injury was asymptomatic on initial presentation, leading them to suggest that in the absence of distracting pain and neurological deficit, radiology may be safely avoided.

**Critique**—This paper is complicated by the fact that being a tertiary referral centre, some of the patients did not initially present to the study centre, but were first treated elsewhere. The investigative algorithm described may not have been used in such patients. The number of these patients is not given. The article does not

Department of  
Accident and  
Emergency Medicine,  
Royal Cornwall  
Hospital, Trerise,  
Truro, Cornwall  
TR1 3LJ, UK

Correspondence to:  
Mr Wyatt

(jonathan.wyatt@  
rcht.swest.nhs.uk)

tackle at all the issue of stable cervical spine fractures, which can also be a very considerable cause of morbidity. The algorithm used assumes the availability of magnetic resonance imaging and the expertise to undertake dynamic forms of imaging in both conscious and unconscious patients. Such equipment and expertise is rarely available outside specialist centres. The paper amply illustrates the considerable difficulties faced by poorly supported junior A&E staff when making decisions in this area.

#### **Validity of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma**

J R Hoffman, W R Mower, A B Wolfson, *et al*  
*N Engl J Med* 2000;**343**:94–9

This prospective observational study conducted at 21 centres in the US set out to validate a set of decision making criteria for requesting cervical spine radiographs in victims of blunt trauma. The criteria for not requesting cervical spine films in such patients were: no midline neck tenderness, no focal neurological deficit, normal alertness, no intoxication or painful distracting injury. Applying these criteria to 34 069 patients who had cervical spine radiographs, all except eight of 818 patients with cervical spine injury were identified. Of the eight “missed” injuries, only two were deemed to be “clinically significant”.

However, the use of the criteria would result in the vast majority (87.4%) of patients presenting with blunt neck trauma having radiographs.

*Comment*—The presented criteria certainly provide a useful model on which to base local protocols. However, its use would result in a large proportion of patients undergoing radiography. It would be interesting to know what effect a short period of observation and re-examination in borderline cases would have on both the proportion of patients radiographed and the sensitivity of the criteria.

#### **Transthecal digital block: digital anaesthesia through the sheath of the flexor tendon**

J Castallanos, C Ramirez, L De Sena, *et al*  
*J Bone Joint Surg (Br)* 2000;**82-B**:889.

This short report presents results of a study into the effectiveness of a local injection of 1 ml of 2% mepivacaine into the sheath of a flexor tendon as a substitute for conventional digital local anaesthesia.

The injection was made at a level distal to the metacarpal head. There was no comparative study group. No data regarding pain scores of the technique are presented. The authors report complete anaesthesia in 58 of 63 patients studied. No complications were reported.

*Comment*—The advantages of this technique, if any, are not obvious. Potential complications (such as infection) associated with breaching the flexor tendon sheath are not mentioned, but deserve consideration. A formal scientific randomised study would be needed before this technique could be considered for routine use.

However, given that injection of local anaesthetic into the flexor sheath seems to have no obvious advantages, does not always produce anaesthesia and may be associated with various potential complications, such a study would raise ethical concerns.

#### **The impact of diagnostic delay on the course of acute appendicitis**

V C Cappendijk, F W J Hazebroek  
*Arch Dis Child* 2000;**83**:64–6

The authors present a retrospective study of 129 children (aged 1–17 years) who underwent appendectomy over a five year period in a Dutch hospital. Definitive diagnosis of appendicitis was delayed beyond 48 hours in 78 patients. As might be expected, the perforation rate was much higher in the delayed diagnosis group (71%) compared with the early diagnosis group (24%). The commonest cause for delayed diagnosis was a mistaken diagnosis of gastroenteritis (seen in 38 of 78 cases). Although diarrhoea was observed in both early and delayed diagnosis groups, it was more common in the latter.

*Comment*—This paper alerts us to the potential perils of making a diagnosis of gastroenteritis. Clearly, the presence of diarrhoea neither confirms a diagnosis of gastroenteritis, nor excludes acute appendicitis. The potential diagnosis of appendicitis needs to be considered in all such cases.

#### **Necessity of radiographs in the emergency department management of shoulder dislocations**

G W Hendey  
*Ann Emerg Med* 2000;**36**:108–13

The author presents data from a prospective observational study to determine the clinical ability of emergency department physicians in making assessments of joint position in suspected shoulder dislocations before and after manipulations. Of 104 patients enrolled, 98 were confirmed to have shoulder dislocations. Of these, 28 patients had a history of previous dislocations and lacked a history of trauma. It was only in this group that the clinical accuracy (where emergency physicians were correct in their diagnosis of the joint position) was 100% both pre-reduction and post-reduction. In patients without a history of previous dislocation or presenting with a history of trauma (even if they had a history of previous dislocation), the clinicians were not always correct in diagnosing joint position, even when they felt “certain” of this diagnosis. The author suggests an algorithm for safely reducing the number of radiographs in patients presenting with shoulder dislocation.

*Comment*—Radiographs of the shoulder are easily available and present little risk to the patient. Errors in this area may be considered to amount to medical negligence. The findings of this study are necessarily highly subjective and it cannot be assumed that all doctors have the same clinical acumen as the ones involved in this trial. For all these reasons, radiographs of suspected shoulder dislocations probably remain advisable in most cases, with the possible

exception of certain patients presenting with a history of recurrent dislocations and an absence of trauma. Even in these cases a post-reduction film may be advisable.

**Emergency department ultrasound scanning for abdominal aortic aneurysm: accessible, accurate and advantageous**

M Kuhn, R L L Bonnin, M J Davey, *et al*  
*Ann Emerg Med* 2000;**36**:219–23

This short study demonstrated that Australian emergency department physicians with limited training in the use of ultrasound imaging were able to make accurate diagnosis of abdominal aortic aneurysms in patients presenting to the emergency department with symptoms suggestive of aneurysmal pathology.

The participating emergency department physicians underwent a three day ultrasound training course. Over a period of 28 months they then performed 68 bedside scans. The

aorta was visualised in 66 patients. The emergency physician scan results were compared with different “gold standards”, including computed tomography, angiography, laparotomy, formal ultrasonography and radiologist review of the videotaped scans. These scans yielded 26 true positive and 40 true negative scans. The sensitivity and specificity were therefore both 100%.

*Comment*—The authors conclude that emergency physicians with limited training can accurately perform aortic scanning to determine the presence or absence of abdominal aortic aneurysms. This conclusion is supported by their findings. While it may seem obvious that the skill to perform ultrasonography would be usefully acquired by all emergency physicians, it remains to be seen whether the results of this study are generalisable internationally and to emergency physicians who are not necessarily enthusiasts.