Acute myocardial infarction in patients with left bundle branch block

EDITOR—We read with interest the paper about the electrocardiographic diagnosis of acute myocardial infarction (AMI) in patients with left bundle branch block (LBBB). It emphasizes the difficulties many have had with electrocardiography (ECG) interpretation in this situation and explains clearly how to use the criteria of Sgarbossa et al. It concludes that these criteria can be used to identify patients with LBBB and AMI.

It is essential that accident and emergency staff recognize this group of patients so that thrombolysis is delivered promptly. Shlipak et al reviewed patients presenting with LBBB and an acute cardiopulmonary history and assessed the usefulness of the Sgarbossa criteria. They found that these criteria had a sensitivity of 82% and a specificity of 100%. Although an ECG that satisfies the criteria is almost certainly indicative of AMI, most (90%) patients with AMI will not meet the criteria. If thrombolytic were to be withheld unless the criteria were met, few patients in this high-risk group would receive appropriate treatment.

Rather than relying on the Sgarbossa criteria, we feel it would be more appropriate to thrombolys all patients (except those with contraindications) who have a history suggestive of AMI and LBBB. This policy is appropriate in the LBBB pattern in critically ill patients who require endotracheal intubation for patients in cardiac arrest. The standard clinical signs widely used to confirm endotracheal intubation are again potentially unreliable and capnography is unhelpful. The use of a lit tracheal stylet (for example TrachLight Stytlet and Trachalight Lightwand, Rusch Inc, Duluth, GA, USA), inserted through the endotracheal tube after intubation, can very reliably indicate the correct tracheal placement by transillumination of the soft tissues of the neck. This simple technique may help to reduce the tragedy of failure to recognize oesophageal intubation in critically ill patients.

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The authors reply

We read with interest the comments of Shepherd and Hardern concerning our article. In large part, we agree with their thoughts. In our report, we stressed several points, including (1) the confounding effect of LBBB pattern on the electrocardiographic diagnosis of AMI; (2) the "normal" or expected findings of LBBB and (3) the normal electrocardiographic strategies to assist in identifying the patient with a potential AMI. Several electrocardiographic strategies are available to the clinician to assist in this endeavour such as comparison with old ECGs, examination of serial ECGs, and a sound understanding of the anticipated ST segment changes resulting from LBBB. These strategies may be supplemented by the clinical decision rule developed by Sgarbossa et al.1

Since our report was published, recent literature2 has suggested that the Sgarbossa et al clinical prediction rule is less useful than reported. The first such investigation,2 not noted by Shepherd and Hardern, which applied the Sgarbossa et al criteria to patients with chest pain and AMI to the emergency department of a North American hospital, found much less promising results—a very low sensitivity coupled with poor interobserver reliability. And, as noted by Shepherd and Hardern, a second study3 investigated the diagnostic and therapeutic impact of this criteria—none effectively distinguished the patients who had AMI from those patients with non-coronary diagnoses. The authors concluded that electrocardiographic criteria are poor predictors of AMI in LBBB situations and suggested that all patients suspected of AMI with LBBB should be considered for thrombolysis. As we stated, even if the ECG is invalidated in the search for AMI in the LBBB patient.

Traditional criteria for administration of thrombolytic agents in the AMI patient most often involves electrocardiographic ST segment elevation situated in an anatomic distribution; the presence of a new LBBB pattern represents another electrocardiographic criterion for such treatment. Shepherd and Hardern suggest that all patients with LBBB pattern—presumably regardless of its chronicity—and a history suggestive of AMI receive a thrombolytic agent. Such an approach is potentially dangerous to the physician who has a high suspicion of AMI and is comfortable initiating thrombolysis based solely on clinical information—in other words, an analysis of the patient’s history and physical examination. Physicians, however, may be uncomfortable administering a thrombolytic agent under such circumstances; in fact, patients with electrocardiographic LBBB and AMI less often receive thrombolysis despite an increased risk of poor outcome4 and a documented benefit.5 The clinician must realize that all patients with chest pain, electrocardiographic LBBB pattern without obvious infarction, and clinically presumed AMI, only a minority will actually be true myocardial infarction.6 Treating all such patients with LBBB and presumed AMI will subject a large part of the AMI population to the potential risks and expense of thrombolysis without a significant therapeutic benefit.7 The chest pain patient with LBBB represents a significant challenge to the emergency practitioner. Currently, no single or combination diagnostic approach exists which will reliably reveal AMI in critically ill patients. Our article was intended to review the appropriate principles of electrocardiography in the LBBB pattern in the hopes that the emergency practitioner would be better versed in interpretation of these complicated ECGs. Therefore offer the AMI patient the correct treatment in rapid order.


Anaesthetic training for specialist registrars in accident and emergency

EDITOR,—Accident and emergency (A&E) trainees are required to spend a minimum of three months on secondment to anaesthetics and the intensive care unit (ICU) if they have not already obtained adequate anaesthetic/ ICU experience before entering the specialty. The depth and breadth of experience varies widely. Sometimes, the trainee is purely supernumerary and gains little experience other than placing laryngeal masks and endotracheal tubes. We have each been fortunate enough to spend six months as trainee senior house officer (SHO) anaesthetists as part of our rotation. We feel that this offers considerable benefit to our training as A&E specialists and recommend it to other A&E trainees.

Anaesthetics is unlike any other clinical specialty. It is impossible to start as the sole “on call” anaesthetic SHO on the first day. Hospitals vary, but most train their new SHOs over three months before allowing them onto the on call rota. In our six month secondments we participated in the on call rota and have benefited from the responsibility of acute decision making. We have become increasingly competent in preanaesthetic assessment, sedation, pain management (including regional anaesthesia), and the induction, maintenance, and rotation phases of a general anaesthetic. We have performed rapid sequence induction independently. Our improved confidence in the management of the airway has to be good for patient care, especially as we often provide initial airway control before the anaesthetist arrives in the A&E department.

A greater understanding of anaesthetic problems and equipment will be increasingly important for A&E consultants as anaesthetics and critical care become more common in hospital management and ventilatory and circulatory support in critically ill patients. We propose that every A&E trainee requiring an anaesthetic secondment undergo six months of anaesthetic and critical care experience with the same commitment and training as a career anaesthetist SHO.

To achieve this, A&E training programmes should routinely allow the trainee to be released to SHO posts in anaesthetics and intensive care for six months. This could be at another hospital, although salary issues would need to be addressed in advance. These include salary protection at the specialist registrar grade, and how much each trust and postgraduate deanery pay.

We accept that both the quality and quantity of dedicated anaesthetic SHOs must be maintained. However, six month slots could still be allocated on a competitive basis, and an anaesthetic specialist registrar or SHO could undertake a similar secondment in A&E on an exchange. A&E medicine has a lot to offer, particularly in those departments that perform regional anaesthesia, rapid sequence induction, advanced life support, and advanced trauma life support without initially involving the on call anaesthetist.

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Casemix Healthcare Resource Group update

EDITOR,—The accident and emergency (A&E) medicine clinical working group of the Casemix Office (part of the NHS Information Authority) has selected six pilot sites to take part in a study leading to refinement of the A&E medicine Healthcare Resource Group (HRG). The chosen sites are as follows (attendances in previous year in thousands):

- Leeds General Infirmary (96)
- Derbyshire Royal Infirmary (78)
- Sandwell District General Hospital (72)
- Princess Alexandra Hospital, Harlow (60)
- Stoke Mandeville Hospital (39)
- Harrogate District Hospital (35)

Other departments are thanked for submitting high quality bids but it was essential to represent a broad cross section of emergency departments.

The current HRG A&E casemix measure version 1.0 uses disposal data that are already collected and are generally comprehensible. The A&E HRGs also have a specificity or reduction in variance for allocating appropriate groups and complexity. Activity using the A&E HRGs will need to be compared with the current HRG measure to identify any under or over allocation. This information was deemed of any other specialty.

Korner returns to the NHS of departmental areas and malleolar fractures. This information was deemed of any other specialty.

The refinement projects will look at the potential of the national triage scale (NTS) and details of how long a patient stays in the department, to see if they provide a further reduction in variance and can be easily collected to drive our HRG.

Work to date of this refinement project anticipates making recommendations to seek changes in the minimum dataset to include the NTS triage groupings, a separate investigation code for more expensive radiological investigations, such as intravenous urography, and a treatment code to identify patients receiving thrombolytic treatment. The change from “finished consultant episode” to so-called “spells” could lose our departments funding for the care of patients awaiting admission in A&E departments and not formally under our care. The pilot sites are deemed of any other specialty.

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In view of the authors’ decision to apply only part of the Ottawa ankle rules, and the disregard for one of the malleoli, it seems inappropriate to conclude that “although useful, decision rules should be used with care and cannot replace clinical judgment and experience”.

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Dr Perry replies
Thank you very much for giving me the opportunity to reply to Dr McCann’s letter. I disagree with Dr McCann’s comments about age. The Ottawa ankle rules clearly state that plain radiography is indicated if the patient is aged 55 years or greater.

The authors accept that our stamper did not specify which malleolus had been examined and may, theoretically, have resulted in some patients being recorded as “Ottawa negative” inappropriately. However, it is clearly stated in the discussion that the four missed fracture patients had their case notes reviewed and there were no apparent reasons why these fractures were not identified. This included ensuring adequate documentation of the clinical examinations.

It was never the intention to study the second rule concerning foot radiography and patients with bony tenderness of the foot, therefore, excluded.


Fast tracking patients with a proximal femoral fracture—more than a broken bone

EDITOR—In 1996 we described a system of fast tracking admission of patients with a proximal femoral fracture to the ward where definitive management could begin. This system had benefits for all those involved, not least the patients who are mostly elderly women at risk of developing pressure sores. Since we published the paper a number of changes have occurred at our hospital which reflect changes occurring in many hospitals in the NHS: the number of acute orthopaedic beds on the hospital site fell from 75 to 60; the number of acute admissions, particularly medical, has continued to rise; and improved resources and initiatives for managing emergency admissions have suffered at the expense of initiatives for reducing waiting lists.

In January 1999 we reviewed the length of stay in the accident and emergency (A&E) department for 25 consecutive patients over 65 years of age who were admitted with a proximal femoral fracture and compared them with figures for patients who were fast tracked in our original paper (fig 1). Although the 1995 figures were for patients who were fast tracked, the mean time for patients who could not be admitted because of the unavailability of an orthopaedic bed had still been only 4 hours and 8 minutes. The average length of stay has risen sharply with 40% of patients now staying in the A&E department for more than seven hours.

This apparent breakdown of a quality improvement initiative is an example of how emergency patients are suffering because of reduced numbers of acute hospital beds and a reduction in resources available for acute cases. In 1998 there were 812 cases of proximal femoral fracture over the age of 65 years admitted to our hospital. We advocate the availability of three dedicated beds each day for the management of patients with a proximal femoral fracture. The predictability of numbers and almost uniformity of presentation makes a fast track system for this type of injury eminently suitable. It is important, however, that hospital management work alongside clinicians in providing the necessary resources to develop a fast track service for this vulnerable group of patients.

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The authors reply
We thank Mr Southward for his comments on our paper. Comprehensive data on CS incapacitant spray are lacking, particularly with regard to the more concentrated solution in use by UK police forces.

Mr Southward reminds us that serious effects are more likely with excessive or prolonged exposure and are generally mitigated by the victim being removed to a well ventilated area. We recommended irrigation of the eyes for severe symptoms as well as suggesting some general measures for decontamination and the treatment of cardiorespiratory complications.

Mr Southward recommends that particular attention be given to areas of the body where air flow may not occur and we are grateful to him for providing this additional advice.

CS incapacitant spray
EDITOR—In 1996, CS incapacitant spray was sanctioned for the use of police forces in England and Wales. As its use increases the demands on accident and emergency departments from individuals who have been exposed to this will also increase. Some of the points in Worthington and Nee’s review are worth clarifying.

The experimental work into the safety of CS was performed on pyrotechnically-generated CS.2,3 The spray used by the police produces a mist that contains CS as a supersaturated solution or as a fine powder. The solution in the spray is a 5% w/v solution dissolved in methyl isobutyl ketone (MIBK). The American forces use a 1% solution.

Pulmonary oedema after CS exposure has been reported,1 but only in conditions where the victim has been unable to escape, and is trapped in a confined area—that is, on exposure to very high concentrations. Equally burns to skin occur in specific conditions: high temperature, humidity, high concentrations, and prolonged exposure.

As mentioned at the outset these experiments were conducted on CS produced by a different method and it is difficult to extrapolate the results to a totally different type of exposure. The solvent, MIBK, has a low volatility, therefore in areas protected from air currents (behind ears, in skinfolds, under clothing, etc) it may not evaporate, prolonging the contact in warm moist areas. MIBK, itself, also has the potential to cause inflammation, dermatitis, and burns to the skin.

Although the standard advice regarding management of CS exposure is to remove the subject from the source and allow a flow of fresh air over the affected parts, if symptoms are persistent irrigation and bathing are required, as skin irritation may not be caused by CS but by MIBK.

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Figure 1. Length of stay in the A&E department for patients admitted with a proximal femoral fracture.
A rare cause of acute confusional state

BRIEFER—A 42-year-old man presented to the Emergency Department of a Regional Hospital with a one-month history of intermittent shortness of breath, palpitations, and a feeling of impending doom. The patient had a history of hypertension and anxiety, and was known to be non-compliant with his medication. His past medical history was significant for a left ventricular aneurysm and a history of alcohol abuse. On examination, he was found to be tachycardic with a heart rate of 120 beats per minute, and was pale and diaphoretic. His blood pressure was 90/60 mmHg, and his respiratory rate was 24 breaths per minute. His lungs were clear to auscultation, and he had a prominent left ventricular impulse. The patient was alert but clearly distressed and agitated, and he was having difficulty concentrating. He was agitated and combative. Both conjunctiva were injected. His wife reported him staggering into the living room and being combative. Both conjunctiva were injected. 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