Acute pain—is there scientific evidence on which to base treatment?

There have been major advances in the treatment of acute and postoperative pain in the past decade, although in some centres, where either research into patient-controlled analgesia (PCA) was being undertaken or there had been great enthusiasm for epidural anaesthesia, for several decades some patients had enjoyed a better quality of postoperative pain relief than the majority. However, it was not until 1988 in the USA and 1990 in the UK with the publication of the Joint Colleges’ Report on Pain After Surgery that both these advanced techniques of pain management gained widespread use in the management of postoperative pain under the supervision of designated teams. It is now a condition for accreditation for training by the Royal College of Anaesthetists (RCA) that an acute hospital has an acute pain team. In addition, training programmes for anaesthetists approved by the RCA demand exposure to the management of both acute and chronic pain during the early and later stages of SpR training. Furthermore, pain was recognized 5 yr ago as an official subspecialty of anaesthesia and plans are currently being laid to establish a formal training and diploma examination in pain management. In 1996, the Australian and New Zealand College of Anaesthetists initiated a certificate in pain management and in 1999 will hold a first examination for a Fellowship in Pain Medicine; the training programme for this fellowship emphasizes the integration of acute, chronic and cancer pain. Also, during training for the FANZCA examination, all candidates are advised to obtain a 3-month block of experience in pain medicine, including acute pain management.

Since 1990, general developments have led to the production of guidelines in the management of acute pain. The success of acute pain teams has resulted in extension of their roles outside the treatment of post-surgical pain into roles in the medical wards, intensive care units, neurosurgical intensive care units, accident and emergency departments and occasionally, the community. In addition, there has been growing pressure to undertake expensive medical therapy only when of proven benefit—the growth of evidence-based medicine. The universal development of audit and quality of care standards and the explosive growth of knowledge in the basic science base and clinical applications in pain management combine to the logical necessity for authoritative guidelines. Recently, two bodies have published guidance: one emanated from Australia as the most recent publication of the National Health and Medical Research Council (NHMRC) and the other from the UK, by the RCA.

The NHMRC through its Health Care Advisory Committee (HAC) has produced a document entitled Acute Pain Management—The Scientific Evidence. Currently, this is probably the most recent and best guidance available on the whole range of acute pain manifest in every type of situation. In its deliberations, the committee was helped by earlier guidelines published in the USA by the Agency for Health Care Policy and Research (AHCPR) of the Department of Health and Human Sciences. Considerable assistance was also obtained from the Cochrane Collaborative Group which aims to document all randomized controlled clinical trials (RCT) on specific topics and this facilitates the conduct of meta-analyses.

The first key feature of the NHMRC document is that it is comprehensive. It emphasizes the multidisciplinary approach to the treatment of acute pain and it highlights many areas of acute pain outside the postoperative period requiring the services of an acute pain team. The document also strays into the area between acute and chronic pain, although it is noted that the NHMRC intends to produce separate guidance on chronic pain at a later date. The NHMRC document was designed for general practitioners, specialist physicians, nurses, physiotherapists, psychologists, psychiatrists and pharmacists. The extent of information however, is considerable and in many areas might only be assimilated easily by an anaesthetist; thus it is the intention to produce shorter, less detailed accounts for general practitioners and for the general public.

Acute pain is a ubiquitous problem as shown by the wide areas covered in the NHMRC document: management of acute pain is described most extensively in the postoperative period in both adults and children, including specialist areas such as neurosurgery and day-care surgery. Examples are provided of algorithms for the management of postoperative pain with i.v., i.m. and patient-controlled administration of opioids. Other areas which are covered include obstetrics,
burns, myocardial ischaemia, herpes zoster, abdominal pain, headache, acute pain in patients with cancer, HIV and AIDS, acute dental and orofacial pain, and acute musculoskeletal pain. The case is argued cogently for adequate treatment of pain arising from the acute abdomen as, rather than masking, this may help to promote a diagnosis. Anaesthetists, for whom experience in both acute and chronic pain is now a mandatory part of specialist training, will benefit greatly from perusing this document.

The second key feature of the NHMRC report is that it describes those authoritative sources of evidence on which much of our clinical practice is based and, equally as important, delineates those areas for which the levels of evidence are weak. The committee attempted in many cases to reference the evidence for its conclusions based on the recommendations of the United States Preventive Task Force, in line with current thinking in evidence-based medicine, and adopted by the NHMRC:

Level 1—Evidence obtained from systematic review of relevant randomized controlled trials (with meta-analysis where possible).
Level 2—Evidence from one or more well designed RCT.
Level 3—Evidence from well designed, non-controlled studies or from well-designed, cohort or case-controlled studies.
Level 4—Opinions from recognized authorities, descriptive studies or reports of expert committees.

It may come as a surprise to the non-specialist that there is remarkably little level 1 evidence for much of our current clinical practice. Meta-analyses are frequently taken as the ‘gold standard’ of evidence although as has been observed recently, meta-analyses should be subjected to the same degree of critical scrutiny as are applied traditionally to a single RCT—unfortunately, some are not compiled with the requisite degree of rigour for grouping RCT. In addition, there is increasing recognition of the shortcomings and potential for bias inherent in meta-analyses, particularly with regard to order of publication and size and selection of studies. None the less, the number of meta-analyses providing level 1 evidence in the area of acute pain is very small. The NHMRC document has highlighted only a few areas, appropriately referenced, for which level 1 evidence exists:

1. That postoperative epidural analgesia can significantly reduce the incidence of pulmonary morbidity.
2. That epidural opioids are more effective when used in conjunction with a local anaesthetic to produce a synergistic analgesic action and reduce the required dose and side effects associated with either the local anaesthetic or opioid alone.
3. That while the currently available NSAID do not reduce severe pain when used alone, their efficacy as a component of multimodal analgesia is confirmed.
4. That paracetamol is an effective postoperative analgesic and that codeine 60 mg produces additional analgesia.
5. That lumbar epidural analgesia is the most effective form of analgesia for childbirth.
6. That anticonvulsants and antidepressants are effective in the treatment of several acute pain states, including neuropathic pain (e.g. post-herpetic neuralgia and diabetic neuropathy).
7. That in 15 of 17 control studies of transcutaneous electrical nerve stimulation in postoperative pain, there was no benefit compared with placebo.
8. That antiviral agents used early in the treatment of acute herpes zoster infection have been shown to accelerate lesion healing and result in faster resolution of pain.
9. That treatment of acute low back pain by bed-rest and immobilization is ineffective and not recommended.
10. This spinal manual therapy for acute lower back pain has not yet been shown to be effective.
11. That there is a suggestion that spinal manual therapy may be of benefit in mechanical neck pain.
12. That in patients with cancer, oral analgesics are the mainstay of treatment and that strong opioids are safe and effective for moderate to severe pain. In addition, radiotherapy plays a major role in pain relief, and epidural, intrathecal and intracerebroventricular opioids are often effective in patients with cancer pain that is not controlled with conventional treatment.

Statements based on level 2 evidence in the document include the fact that: more aggressive approaches to the management of early postoperative pain may reduce the transition to chronic postoperative pain; multimodal analgesia improves the effectiveness of pain relief after surgery; PCA has been shown to provide greater patient satisfaction and improve ventilation compared with conventional routes; the adverse effects of NSAID are potentially serious and contraindications must be respected; there is no increase in Caesarean delivery rate associated with epidural analgesia; pethidine is no more effective than NSAID in the treatment of migraine; early administration of opioids in patients with an acute abdomen does not reduce the detection rate of serious pathology but may facilitate it; and non-steroidal anti-inflammatory drugs have been shown to be more effective than opioids in relieving the pain of renal colic.

The RCA recently issued guidelines for a small circumscribed area of acute pain; the use of NSAID in the perioperative period. The RCA has also taken an evidence-based approach but using a slightly different classification of evidence from that adopted by the NHMRC. Recommendations have been made according to evidence graded as:

(A) Stringent available evidence, including at least one randomized trial or meta-analysis.
(B) Well conducted clinical studies but no randomized trial.
(C) Expert consensus of the group in the absence of clinical studies of good quality.

The amount of work involved in producing these guidelines has been enormous. All articles relating to the use of NSAID in the perioperative period since 1980 (in excess of 200) were received by members of the committee involved in drafting the guidelines (the membership being carefully selected to ensure a wide blend of experience and knowledge). All published studies were classified into seven categories, varying from a randomized clinical trial to a case report. In order to be included in category 1, an RCT was scrutinized further for quality, according to the recommendations of Detsky and colleagues.10

The working party summarized its findings by reference to the use of NSAID in different clinical situations (surgical specialties), adverse effects, drug interactions, and the use of spinal–epidural analgesia in patients receiving these drugs. An interesting and novel feature of the RCA document was the inclusion of a section on patients’ views.

Many of the conclusions reached in the RCA document will already have been accepted by UK anaesthetists who remain abreast of the literature; however, they will be reassured by the weight of evidence supporting their clinical practice, for example NSAID are not adequate as analgesia for major surgery, they reduce opioid requirements, often enhance the quality of opioid-based analgesia, they are often adequate alone for day-case surgery and they increase bleeding time and, on occasions, blood loss (grade A evidence). Many other commonly expressed tenets, such as those involving drug interactions, are based on grade B evidence and the view that NSAID impair renal function in a variety of situations is based on grade C evidence. In the latter category also is the view expressed by the committee that patients and/or parents should always be informed of the intention to use the rectal route for administration of NSAID.

As studies of psychological preparation for surgery have tended to be published in the psychology rather than the anaesthesia literature, it is worth noting that both reports drew attention to a meta-analysis of randomized controlled trials of psychological preparations for surgery, including postoperative outcomes. The authors, Johnston and Vogele, concluded that four regimens produced a statistically significant improvement in pain measures and reduced consumption of analgesics, namely: relaxation training, procedural information, cognitive coping methods and behavioural instructions.11 Clearly, this area is one which has been greatly neglected so far by anaesthetists individually and also by acute pain teams.

Despite the huge expansion in basic science research into pain, often funded by external grant awarding agencies, which has helped to stimulate a growth in clinical research, there is still a need for properly conducted controlled clinical studies evaluating most areas of therapy in acute pain. The NHMRC report on acute pain should serve to foster research and clarify those areas in most urgent need of investigation. Even though the NHMRC report was written primarily for Australian reading and the RCA guidelines for an UK audience, both are comprehensive and authoritative and deserve a wider audience. Furthermore, with recommendations constructed on the basis of evidence, they should serve as a template for guidelines in many other areas. However, as pain is still a rapidly evolving field, this approach also leads us to the conclusion that guidelines can only remain valid for a relatively short period (perhaps 1–2 yr) before revised versions are necessary. The cost involved both in time and finance is considerable, and unfortunately, despite the considerable value demonstrated here in the evidence-based approach, this may prove a limiting factor in updating existing guidelines on the basis of new evidence and in producing comprehensive new guidelines in a large number of small circumscribed areas.

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References