PG03(A)BP Guideline for the management of major regional analgesia Background Paper 2014

Short title: Major regional analgesia BP

1. Purpose of review

Major regional blocks are commonly employed for multiple purposes including postoperative analgesia, surgical anaesthesia, obstetric analgesia, and for relief of acute and chronic non- surgical pain. Including obstetrics, central neural blockade accounts for almost 70 per cent of all major regional blocks[1] and although complications are relatively uncommon[2] they may have serious consequences. In the non-obstetric population, the use of continuous and single-shot peripheral nerve blocks has significantly decreased the frequency of postoperative epidural infusions in all but major abdominal and thoracic surgery.[2]

Since the 2003 review of ANZCA professional document *PG03(A) Guideline for the management of major regional analgesia* there has been increasing clinical knowledge, changes in attitudes, changes in management of anticoagulants[3], new techniques for management of local anaesthetic toxicity[4], and advances in technology especially with the availability of ultrasound guidance techniques.[5] The guidelines have consequently been updated to ensure that they remain contemporaneous with regard to the management of major regional blocks and potential complications.

2. Background

This professional document is intended to apply to all techniques involving central neuraxial blockade, use of catheters for intermittent administration or infusion of analgesics, and/or administration of local anaesthetic approaching or exceeding the recommended upper dose limits.

With the advent of ultrasound and its increasing use as an adjunct in localising anatomical structures, an understanding of sonoanatomy is becoming more important.[6]

The 2010 incident[7] involving the inadvertent epidural administration of topical antiseptic chlorhexidine solution highlighted the need to address the potential for such errors in the current review.

Informed consent is guided by *PS26(A) Position statement on informed consent for anaesthesia or sedation*. Although the incidence of complications is relatively low and the incidence of toxicity has fallen from 0.2 per cent to 0.01 per cent over the past 30 years, the consequences may be serious including permanent neurological injury (0.02 per cent to 0.07 per cent); transient neurological injury (0.1 per cent to 0.8 per cent)[2]; local anaesthetic toxicity with peripheral nerve blocks (0.08 per cent); infection and failed block. Accordingly, these risks should be discussed with patients although the challenges associated with the provision of informed consent in the labour ward or post anaesthesia care unit are recognised.

The potential for infection is a recognised risk with serious consequences especially in association with techniques including epidural and spinal analgesia. In addition to *PG28(A) Guideline on infection control in anaesthesia* (item 3.1.3), the National Health and Medical Research Council has published guidelines[9], as has The Association of Anaesthetists of Great Britain and Ireland.[8]

Patients receiving anticoagulation medications or the presence of coagulopathies pose increased risks of major sequelae resulting from haematoma, particularly with epidural and spinal blocks, but also from

retroperitoneal haematoma associated with lumbar plexus blocks. Patients with coagulopathies or receiving anticoagulant medication require special consideration and adherence to strict protocols.

In recognition of the importance of preventing a wrong site block, the guidelines now include the requirement to perform a block “time out” or “pause moment”. The true incidence of wrong site block is unknown. 67 cases were reported to the National Reporting and Learning Service in the UK in 15 months.10 The incidence in Australia and New Zealand is estimated at 0.04% (seven events from a denominator of 19, 268 procedures).[11]

Factors that have been shown to increase the risk of performing a block on the incorrect side include a significant time delay between patient “check-in” and performance of the block, time pressure, distraction in a busy environment, turning the patient and covering marks in an attempt to keep the patient warm. A regional block preprocedural checklist has been recommended by the American Society of Regional Anesthesia to reduce the potential for wrong site performance.[12] The “Stop Before You Block” campaign[13] has been widely adopted in the UK and is in the public arena for education purposes.

Monitoring is essential during the initiation of a major regional block as well as during the maintenance of the block. The spread of local anaesthetic can be unpredictable (especially in the epidural and subarachnoid spaces) leading to extensive sympathetic blockade with consequent hypotension; intercostal weakness; and impaired conscious state associated with absorption of local anaesthetic, hypotension, or total spinal. Also, the proximity of vessels and nerves gives rise to the problem of local anaesthetic absorption leading to toxicity. As circulation, ventilation and conscious state changes can occur quickly, appropriate monitoring is required.

The onset of side effects and toxicity can be unpredictable and delayed, and dependent on the route of administration of the medication, the nature of the medication, and the volume being administered. Practitioners need to be present until such time that these risks have diminished. Handover to a responsible practitioner may proceed in accordance with *PS53(A) Position statement on the handover responsibilities of the anaesthetist*.

Subsequent management of major regional analgesic boluses or infusions in the ward demand the elimination of the risk of incorrect catheter identification. There are numerous means available including clearly labelling the tubing, colour coding the tubing (cognisant of colour blind issues), standardisation of different sized connections for each specific application (intravenous versus epidural), and the absence of injection ports on giving sets used for major regional blocks.

Infusion pumps have been the source of complications with particular concern about the ability to limit the maximum volume within a specified time period.

Optimisation of pain relief requires assessment of pain, which is enhanced in patients from whom feedback may be obtained. In the absence of the ability to provide such feedback, for example in small children or cognitively impaired patients, tools are available to assist the assessment of pain control. Assessment is not only central to pain control but also to diagnose the development of a new physical problem, such as Compartment Syndrome.[14] Similarly the presence of indwelling catheters may lead to complications including epidural abscess, epidural haematoma, and spinal cord or nerve compression.[15,16] The generation of protocols for the recognition and early diagnosis should be encouraged to facilitate urgent assessment and management. Likewise, the development of protocols for catheter removal in anticoagulated patients should be promoted.[17]

Specific mention of the role of lipid emulsions in conjunction with advanced cardiac life support is warranted.[4]

3. Summary

The provision of major regional analgesia services continues to increase, having afforded patients considerable benefits. Some of the risks accompanying regional analgesic techniques have been mitigated through changing technology, especially with the increased application of ultrasound guidance. However, when complications do arise they can have serious consequences. Guidelines are provided to enhance awareness of the potential problems, educate practitioners and staff involved in caring for patients receiving regional analgesia with regards to recognition and management of complications, and to encourage the establishment of the necessary protocols in hospitals.

Related ANZCA documents

PS26(A) Position statement on informed consent for anaesthesia or sedation

PG28(A) Guideline on infection control in anaesthesia

PS53(A) Position statement on the handover responsibilities of the anaesthetist

References

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Process of document review

The initial draft was developed by Dr Peter Roessler, Director of Professional Affairs (DPA) Professional Documents, Mr John Biviano, Director Policy, and Ms Rebecca Conning, Policy Officer, Professional Documents, and was then discussed by the document development group (DDG).

The DDG comprised:

Associate Professor David A Scott, FANZCA, FFPMANZCA, Councillor
Dr David M Scott, FANZCA, Chair, Regional Analgesia Special Interest Group

Dr Kym Osborn, FANZCA, Obstetric Anaesthesia Special Interest Group
Dr Peter Roessler, FANZCA, Director of Professional Affairs (Professional Documents)
Associate Professor Graham Hocking, FRCA, FFPMANZCA, FANZCA, was invited to contribute to the review in his capacity as an expert.

The following were also consulted:

National/regional committees
Faculty of Pain Medicine Board
ANZCA Trainee Committee
Regional Anaesthesia Special Interest Group
Mr John Biviano, General Manager, Policy
Ms Rebecca Conning, Policy Officer, Professional Documents

A revised version of PG03(A) was promulgated in 2011 with pilot status for approximately one year, during which further feedback was sought with a view to producing a definitive version in early 2013. At the close of the pilot phase, amendments were made to clarify the need for electrocardiography and pulse oximetry to be available (item 2.9), and also in regard to the engagement of interpreters (item 4.3).

In 2014, in recognition of the importance of preventing a wrong site block, the guidelines were updated to include the requirement to perform a block “time out” or “pause moment”.

Professional documents of the Australian and New Zealand College of Anaesthetists (ANZCA) are intended to apply wherever anaesthesia is administered and perioperative medicine practised within Australia and New Zealand. It is the responsibility of each practitioner to have express regard to the particular circumstances of each case, and the application of these ANZCA documents in each case. It is recognised that there may be exceptional situations (for example, some emergencies) in which the interests of patients override the requirement for compliance with some or all of these ANZCA documents. Each document is prepared in the context of the entire body of the college's professional documents, and should be interpreted in this way.

ANZCA professional documents are reviewed from time to time, and it is the responsibility of each practitioner to ensure that he or she has obtained the current version which is available from the college website (www.anzca.edu.au). The professional documents have been prepared having regard to the information available at the time of their preparation, and practitioners should therefore take into account any information that may have been published or has become available subsequently.

While ANZCA endeavours to ensure that its professional documents are as current as possible at the time of their preparation, it takes no responsibility for matters arising from changed circumstances or information or material which may have become available subsequently.

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