Regional anaesthesia: asleep *vs* awake?

The decision about whether to perform a peripheral nerve block asleep or awake is the subject of much debate. The most important issue is minimizing the risk of nerve damage. With the advent of ultrasound-guided blocks there has been a move towards awake regional anaesthesia. However, a number of case reports demonstrate nerve injuries when performed awake. Sites et al (2012) demonstrated a risk of 1.8/1000 cases five or more days after injury. This article addresses this interesting dilemma.

Awake

Regarding nerve damage, the main benefit of performing a peripheral nerve block awake is that the patient can report symptoms of pain or paraesthesia associated with intraneural injection. While symptoms are insensitive test of needle to nerve contact, their positive predictive value is close to 100% (Macfarlane et al, 2008) and a general anaesthetic removes all opportunity to communicate symptoms of potential nerve injury (Bernards et al, 2008). However, symptoms could indicate that the damage has already occurred (Dalens and Albert, 2014). There are no sensitive indicators of nerve injury and patients with these symptoms often have no clinical sequelae.

Intraneural injection (within the epineurium) has had a renaissance and is thought to be a useful target for local anaesthetic despite previous reports of its absolute danger. It is difficult to pierce the tough perineurium with a blunt needle and damage the fascicles within, with nerves tending to move away from approaching needles (Neal et al, 2008).

The majority of awake peripheral nerve blocks are actually performed with 'light' sedation, with the aim of minimizing discomfort from skin puncture with the needle. Sedation levels are a spectrum and the potential for a patient to fall into 'deep' sedation may limit the benefits of performing a block awake in the first place. There are few clinical data to indicate what impact sedation has on the risk of nerve damage.

Another benefit of performing an awake peripheral nerve block is that a rapport can be built with the patient providing reassurance of the analgesia gained. In an ageing population, being able to perform a regional block may remove the need for a general anaesthetic and the associated risks. Reduced consciousness can be an early sign of local anaesthetic toxicity. However, most or all of the local anaesthetic may have been given by the time symptoms occur, limiting their use as an early warning sign (Bernards et al, 2008).

Asleep

Performing a block asleep may limit patient anxiety, especially in those who are needle phobic or where a block does not require symptomatic monitoring (e.g. fascia iliaca blocks). This is especially relevant in children where the risk of damage as a result of movement may outweigh risks when performed asleep. Taenzer et al (2014) concluded that performing a block asleep on a child was as safe as awake. Asleep blocks may also be beneficial for training purposes.

The American Society of Regional Anaesthesia and Pain Medicine produced guidance on performing procedures on anaesthetized or heavily sedated patients (Neal et al, 2008). Their recommendations included that limiting local anaesthetic toxicity is not a reason for foregoing performing blocks in asleep patients; that adult neuraxial blocks should rarely be performed in asleep patients, although in a child performing neuraxial blocks asleep may outweigh the risk; and finally that peripheral blocks, especially interscalene blocks (as a result of the risks of spinal cord injury), should be performed in awake patients. However, the risk:benefit ratio of performing blocks may improve in some patients, e.g. those with dementia.

Conclusions

There is considerable debate about whether to perform a regional anaesthesia block awake or asleep. The overriding factor should be patient safety. The risks of regional anaesthesia, albeit low, occur regardless of conscious level. Performing a peripheral nerve block awake with ultrasound should be considered best practice, although data to support this as a way to minimize the risk of nerve damage is lacking. Conversely, there are circumstances where performing a block asleep with ultrasound is appropriate and little evidence to suggest it is unsafe. The decision should be based on patient factors and type of block and taken in partnership with the patient, where possible. Large scale prospective studies should be undertaken to establish a definitive answer. **BJHM**

Bernards C, Hadzic A, Suresh S, Neal J (2008) Regional anaesthesia in anesthetized or heavily sedated patients. *Reg Anesth Pain Med* **33**(5): 449–60 (doi: 10.1016/j.rapm.2008.07.529)

Dalens B, Albert N (2014) Asleep or awake rethinking "safety". *Reg Anesth Pain Med* **39**(4): 267–8 (doi: 10.1097/AAP.0000000000000111)

Macfarlane A, Chin K, Prasad G, Brull R (2008) Regional anaesthesia: awake or asleep? *Anaesthesia* **63**: 1259–60 (doi: 10.1111/j.1365-2044.2008.05718_1.x)

Neal J, Bernards C, Hadzic A et al (2008) ASRA Practice advisory on neurologic complications in regional anesthesia and pain medicine. *Reg Anesth Pain Med* **33**(5): 404–15 (doi:10.1016/j.rapm.2008.07.527)

Sites B, Taenzer A, Herrick M, Gilloon C, Antonakakis J, Richins J, Beach M (2012) Incidence of local anaesthetic systemic toxicity and postoperative neurologic symptoms associated with 12,668 ultrasound-guided nerve blocks. *Reg Anesth Pain Med* **37**(5): 478–82 (doi: 10.1097/AAP.0b013e31825cb3d6)

Taenzer A, Walker B, Bosenberg A et al (2014) Asleep versus awake: does it matter? Pediatric regional block complications by patient state: A Report from the Pediatric Regional Anaesthesia Network. *Reg Anesth Pain Med* **39**(4): 279–83 (doi: 10.1097/AAP.0000000000000102)

Dr JT Parry is Specialist Registrar in Anaesthesia, Central School of Anaesthesia, London Deanery, Royal Free Hospital, London NW3 2QG (jamesparry@doctors.org.uk)

Anaesthetic and critical care dilemmas are coordinated by **Dr Matthew Henley**, Anaesthetic Fellow, Royal National Orthopaedic Hospital, Stanmore and **Dr Prashanth Nandhabalan**, Specialist Registrar in Anaesthesia and Intensive Care, King's College Hospital NHS Foundation Trust, London