CORRESPONDENCE

Ultrasound reduces the minimum effective local anaesthetic volume

Letter 1

Editor—I am sure like many regional anaesthetists and ultrasound (US) advocates I read this article1 with the usual expectation that of course ‘seeing’ with US will result in less local anaesthetics (LA) required compared with ‘blind’ peripheral nerve stimulation (NS). Indeed, the authors as expected conclude that US reduces LA volume compared with NS for interscalene block. This appears to be yet another nail in the coffin for the now obviously archaic NS mode of locating nerves. However, the data do not quite give the clear-cut answer the authors conclude.

If we look at the NS group, seven out of the 20 patients studied could not have their plexus found in a very generous 10 needle passes. This equates to a block failure rate of 35% even if 100 ml had been the starting dose! When looking at effective volumes of LA, to even include them in the total number of NS blocks, let alone three in the step-down sequential reduction are inappropriate. These patients did not have an NS block but a failure to find the plexus and should have been a protocol violation and replaced. Subsequently therefore, when comparing volumes of LA, only 13 NS blocks could have been compared with an unequal 20 US. What this does show however is that the learning curve for US-guided regional anaesthesia is a lot shorter than NS.

It is of great interest ‘given that shoulder surgery can be particularly painful’ that a research ethics board allowed a study to include sham blocks without significant additional analgesia beyond preoperative celecoxib and paracetamol. It is because they were able to give 0 ml to three patients that the authors are able to calculate a minimum effective analgesic volume (MEAV) of 0.9 ml which is less than any patient in their study who got a block actually received. For those who actually got a block with LA 1 ml was the lowest dose given. How then can the authors realistically quote an MEAV of less than this? This 0.9 ml only just achieved significance of \( P=0.034 \) so it is hard to see significance being achieved if MEAV was >1 ml and the 5.4 ml was in only 13 patients not 16 or 20.

This was a potentially important study as highlighted by the BJA giving it CME status. But unfortunately, a peer-reviewed significant result of less LA being required with US compared with NS will now be quoted when in fact this is difficult to justify at least from the data presented. Perhaps, the peripheral nerve stimulator may be at least considered for a temporary reprieve from the museum?

Conflict of interest

The author has received honoraria from BBraun for lectures on ultrasound-guided regional anaesthesia.

A. T. Wilson*
Leeds, UK
*E-mail: andy.wilson@leedsth.nhs.uk

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Letter 2

Editor—we read with interest the paper ‘Ultrasound reduces the minimum effective local anaesthetic volume compared with peripheral nerve stimulation for interscalene block’ by McNaught and colleagues.1 We would like to raise few issues that concerned us:

(i) Inadequate power of the study: of the initial 60 patients planned for this study, 17 patients could not be included in the study (12 refused to consent and five were not seen at the preoperative assessment unit). Three patients were excluded due to protocol violations, whereas a further three patients’ data were not included due to failure to identify the plexus (>10 needle passes). Therefore, out of 60 patients powered for this study, only 37 were included in the final analysis, which amounts to 40% reduction in the sample size. Why could the authors not recruit more patients to maintain the power of the study? Of the 37 patients, 21 were in the ultrasound (US) group and 16 were in the nerve stimulation (NS) group. In the NS group, data from three patients were included, even though the blocks were eventually done with US guidance.

(ii) Confounding factors on primary outcome measure: the primary outcome measure was pain score 30 min after entry to the recovery room. The use of high doses of intraoperative fentanyl in both groups raises the question about the adequacy of the blocks for the surgery. Combination of using high doses (in some cases up to 400–500 \( \mu \)g) of fentanyl and the use of local anaesthetic mixture of lidocaine and bupivacaine for portal site infiltration could have potentially masked an insufficient interscalene block and favoured better pain scores in the recovery room.

(iii) High failure rate in identifying the brachial plexus: in the NS group, seven out of 20 patients, plexus could not be identified even after 10 needle passes. The data from the three patients requiring more than 10 needle passes, who subsequently had US-guided block should not have been included in the final analysis. If this group was excluded, then we will be comparing a significantly unequal number of patients (21 in the US group vs 13 in the NS group). To