Regional anaesthesia always works—provided you put the right dose of the right drug in the right place

Editor—We read with great interest the article comparing the minimum effective local anaesthetic (LA) volumes for interscalene blocks (ISBs) performed with either ultrasound (US)-guidance or peripheral nerve stimulation. However, we have a number of concerns with the study which stem from the statement that ‘regional anaesthesia always works—provided you put the right dose of the right drug in the right place’.  

First, the study was not purely a comparison of US vs peripheral nerve stimulation. Operators performing US-guided ISB were permitted to use nerve stimulation at their discretion. Although the advantages and disadvantages of this practice are hotly debated, in our experience, this reduces the risk of infiltrating LA around non-neuronal tissue. It would be of interest to know which ISBs were performed using both US guidance and peripheral nerve stimulation.  

Secondly, the rate of failure of the operators performing the ISB using peripheral nerve stimulation (7/20; 35%) was very high. Of those blocks performed ‘successfully’ with nerve stimulation, five of 13 (38%) were not successful. It would have been of great interest to use US in these cases to assess the spread of LA to determine whether the drug was in the right place.  

We suspect that the operators performing the ISB using peripheral nerve stimulation often failed to deploy LA in the right place. The authors imply that this is inherent to the technique and that US-guided blocks are therefore better. However, the postero-lateral in-plane US-guided approach to the brachial plexus used in their study is very different from the anatomical landmark techniques for ISB which aim to enter the interscalene groove from the ventral surface of the neck. It should not be assumed that operators who are proficient in the performance of US-guided blocks are equally proficient in the performance of blocks using the peripheral nerve stimulator. An alternative explanation for the observations is that the operators performing ISB were more familiar with the use of US.  

At our institution, we recently introduced US-guided ISB, so the reverse is true. In a recent review of our practice of 200 ISBs performed for shoulder surgery with the peripheral nerve stimulator, the brachial plexus was identified in less than three passes in more than 95% of cases. Of these cases, more than 80% provided adequate postoperative analgesia as defined by postoperative requirement for opiates analgesia (admittedly using 30 ml 0.375% bupivacaine). We introduced in-plane US-guided ISB in 2010. We converted to use of the peripheral nerve stimulator if after three passes we were unsuccessful. In the first 50 blocks, we converted to the use of the peripheral nerve stimulator in 50% of cases. Of those ISB performed successfully with US, 88% provided adequate postoperative analgesia. In the light of our observations, we feel that the observations of McNaught and colleagues should not be used as the benchmark against which to judge the performance of ISB using the peripheral nerve stimulator.  

Thirdly, we occasionally perform shoulder surgery with ISB as the sole anaesthetic and analgesic technique without any sedation. Unfortunately, the observations of McNaught and colleagues cannot be applied to the performance of ISB as a sole anaesthetic technique. Assessment of the quality of the block before surgery could have given some suggestion as to whether surgery could have been contemplated without general anaesthesia.  

Finally, it is important to recognize that the MEAV 50 is a theoretical construct and that we want all of our blocks to be successful. It would therefore be more useful to calculate an MEAV 99. As there were no significant differences in motor and sensory block and no difference in respiratory impairment between groups, we would question the value of using <10 ml LA for ISB.

Conflict of interest
None declared.

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Reply from the authors
Editor—We would like to thank Drs Rajendram, Pemberton, and Hayward for their comments regarding our recent article. They made a number of comments that we shall address in order. Although in the ultrasound group, practitioners were allowed to confirm final needle-tip position with nerve stimulation, the single needle pass to the superior trunk was guided by ultrasound. Unfortunately, we do not...
have documentation as to how often nerve stimulation confirmation was used. However, it was the ultrasound endpoint, not nerve stimulation, which was consistently used to identify the superior trunk in all cases. The point they make regarding local anaesthetic spread in the nerve stimulation group is a valid one. Unfortunately, we did not assess local anaesthetic spread in this group. With regard to the experience of practitioners using nerve stimulation, all blocks were performed or supervised by consultant anaesthetists equally skilled in both nerve stimulation and ultrasound-guided techniques and we used the classic Winnie method for the nerve stimulation group. The authors relate their own comparison of nerve stimulation and ultrasound-guided interscalene block and observe that their success in locating the plexus with ultrasound was only 50% in their early experience of this technique. Their comparison between the performances of the two techniques is at different points in the learning curve, that is, their experience with the nerve stimulator method was likely much greater at that point compared with ultrasound. It is therefore not surprising that their ability to locate the plexus with ultrasound was less successful. The interscalene technique used in our study was for postoperative analgesia and no comment can be made about the effectiveness of lower volumes for anaesthesia. Further study will be required. The estimation of MEAV50 using the up–down sequential dosing method allows direct comparison of two techniques using smaller sample sizes than other methods of comparison. We have demonstrated previously that with interscalene block volumes as low as 5 ml can be used to successfully produce postoperative analgesia with quality and duration equivalent to much greater volumes. It is not clear at this time whether volumes lower than 5 ml can also produce similar durations of analgesia.

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Use of L’Abbe plot in meta-analysis

Editor—I would like to thank the authors for choosing such an interesting topic for their hypothesis of using the L’Abbe plot to assess the relationship between the severity of illness and the effect of treatment.1 I would like to make a few comments and wonder if the authors agree with them. My first point is regarding the use of the L’Abbe plot in meta-analysis. Although the scatter plot is a nice way of plotting the events rate in the treatment group against the control group and it is visually appealing for readers, it was in fact introduced in an attempt to solve one of the problems of reporting meta-analysis which is the variation of beneficial effect depending on the underlying patient risk factors in different trials.2 However, the plot itself is not without problems and it has been criticized for introducing bias.3 I totally agree that the plot could be a valid method of identifying the ‘odd’ trials in a heterogeneous meta-analysis, but care should be taken before making any conclusions regarding the treatment effect in such analysis. For instance, if the mortality in the control group happened to be low purely by chance or, although unlikely, due to small inequality at baseline, then the unfavourable effect of treatment would be likely and vice versa. My second point, in the methodology, the authors calculated the predicted mortality in both of the trials groups using that trial severity of illness score together with the weighting of coefficients of sepsis and I wonder if the authors think that different severity scores in different trials could be partially responsible for the dissimilarity in mortality rate between the predicted and the observed values in the three trials identified. My last comment is regarding the re-plotting of the results after excluding the three trials with the higher mortality in the control group. Although it was a nice demonstration how the estimated effect will be different, care should be exercised to avoid publication bias.

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