

The success of periclavicular brachial plexus block

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There were two papers published on brachial plexus block (BPB) this month. One was on the difference in outcome between infra and supra-clavicular approach using nerve stimulator when blocking the upper arm from the elbow joint down [1], and the other paper compared the outcome between ultra-sonography guided supra-clavicular approach with direct visualization of the brachial plexus to cases where visualization was not achieved [2]. Both approach methods showed high success rates in achieving nerve block of the upper arm but incidence of Horner's syndrome and pneumothorax was lower in the infra-clavicular block group in the fist study. The second study showed that even when direct visualization was not achieved or was vague, injection around the subclavian artery, though the success rate was a bit low, was adequate enough to achieve nerve block and there was no significant difference in the complication rate, not to mention that there was no case of pneumothorax.

For a successful brachial plexus block to be achieved there are many factors to be considered, one particular factor is the precise targeting of the nerve itself and there have been various methods to do so. Such as inducing paresthesia through direct nerve contact, direct injection into the peri-arterial sheath via arterial puncture, identifying sensory and motor response using nerve stimulators, and the more recently acclaimed visualization of surrounding anatomical structures using ultra-sonography resulting in higher success rates in achieving brachial plexus block. There are a number of recent studies on BPB comparing the effectiveness of nerve block achieved by the combined use of nerve stimulator and ultra-sonography, and the independent use of each method separately which show diverse results depending on the researcher, but the use

of ultra-sonography guided BPB prevails overwhelmingly in success rate, complication rate, shorter duration of application and patient satisfaction [3-7].

The anatomical pathway to reach the brachial plexus is diverse. Since the first report on the variation of the brachial plexus over a 100 years ago to more recent cadaver autopsies showing cord level variations in up to 12.8% of cases [8], acknowledge the diverse range of variations associated with the brachial plexus which can not only play a definite role in the failure of BPB, but can also increase the rate of complications due to multiple punctures when using the nerve stimulator, which in turn makes the usefulness of ultra-sonography more valid. Nerve block performed under ultra-sonography does not come without a financial burden, but there has been a report acknowledging that the use of ultra-sonography financially overpasses the nerve stimulator in the long run [9].

In conclusion, even though the introduction of the nerve stimulator and nerve block needle immensely advanced BPB, it cannot be compared to the advantages brought about by ultra-sonography. Furthermore, ultra-sonography is continuously developing into 3-dimensional and 4-dimensional even at this moment. Nevertheless, there are still many hospitals without even the most basic ultra-sonographic equipment and I hope that in the very near future all medical facilities become equipped with ultra-sonography.

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