Continuous interscalene brachial plexus block

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Interscalene brachial plexus block is an effective analgesic technique in shoulder surgery. However, single injections of long acting local anesthetics including ropivacaine or levobupivacaine for this block have limited analgesic duration. The patient may complain of severe postoperative pain at midnight. To provide longer lasting analgesia, continuous block by the insertion of a catheter is essential. We describe our technique for continuous interscalene brachial plexus block.

The patient is placed in the lateral decubitus position because we need sufficient work space behind the neck. First, we detect the cervical spinal nerve root. The block target by our method is between the C5 and C6 roots. The transverse processes of C5 and C6 spine have anterior and posterior tubercles. By contrast, the transverse process of C7 has only a posterior tubercle. Using this anatomical difference, we can determine the appropriate insertion site.

After local injection of 0.5% lidocaine along a predetermined path, an 18G Tuohy needle (B Braun, Tokyo) is inserted in-plane approximately 1 cm lateral to the probe to best visualize the needle. When the needle tip has advanced between the C5 and C6 spinal nerve roots, a small amount of local anesthetic is injected. If the local anesthetic (0.2% ropivacaine) spreads into the interscalene groove between the anterior scalene muscle and middle scalene muscle, we inject an additional 10 mL of local anesthetic to make a space for catheter insertion. Then, the catheter (20G; Perifix ONE; B Braun) is inserted via the Tuohy needle and advanced approximately 2 cm beyond the needle tip. After removal of the needle, the catheter tip is hydrolocated by a small amount of ropivacaine and adjusted to achieve its final position between the C5 and C6 nerve roots. When the spread of local anesthetics is not clear, an additional small amount of air could be injected to help locate the tip. Because the catheter which we use has six side holes distributed at approximately 1–2 cm from the tip of the catheter, the catheter tip is first inserted into the anterior scalene muscle and then adjusted to locate the side holes below the C5 spinal nerve root. The catheter is fixed by Dermabond (Ethicon, Tokyo) at the skin and draped. Ropivacaine (0.2%) is infused at a rate of 4 mL/h for 48 hours postoperatively. If infused for a longer period, dislodgement of the catheter might occur. By this method, motor weakness of the fingers is minimized.

Continuous brachial plexus block is effective for pain control during and after shoulder surgery. However, misplacement of the catheter might result in ineffective analgesia. Moreover, motor weakness of the fingers could result in poor quality of life after surgery. By our method, effective analgesia is achieved by the first injection with a low concentration of ropivacaine during the early postoperative period. Because continuous infusion of the local anesthetic is planned, a low concentration is indicated to minimize the block complications including phrenic nerve palsy and unwanted motor weakness of the fingers.

References


Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.jaat.2016.02.002.

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