

CHAPTER 5



DISCUSSION

The effective postoperative pain therapy is not only makes the patients more comfortable and sounds ethical but also reduces some of postoperative complications²⁹. Since ropivacaine was introduced into clinical practice for its advantages of less central and cardiovascular toxicity and more motor sensory differential block, there have been many studies compared between different concentration of ropivacaine and bupivacaine with or without opioids. Motor block is significantly more common and more intense with 0.2% ropivacaine than the lower concentration especially when epidural block was done at low thoracic or lumbar level³⁰. Epidural anesthesia with local anesthetics is often used for knee arthroplasty and continuous or patient-controlled epidural analgesia is popular for postoperative pain relief. Although the combination of opioid and local anesthetic agent seem to make the analgesic property more effective, it may associated with opioid- related side effects. Small dose of ketamine was used to increase the effect of ropivacaine instead of opioid to avoid opioid-related side effect³¹. Brendan et al³² evaluated the safety and the efficacy of a 72-h epidural infusion of 0.2% ropivacaine with or without fentanyl after colonic surgery. The addition of fentanyl to ropivacaine resulted in potentiation of pain control; however adverse effects and cost of treatment are increased and readiness to discharge is delayed. Scott et al³³ demonstrated that 0.2% ropivacaine provides good analgesia. In contrast, Lui et al showed that a smaller concentration of ropivacaine

provides less motor block and lower incidence of orthostatic hypotension during PCEA where the epidural catheter was inserted at low thoracic or lumbar level.

Since the choice of the optimal concentration of local anesthetic is an important issue, determined by the best balance between pain relief and adverse effects. Ropivacaine is 0.4-0.5 as potent as bupivacaine. Therefore, we chose 0.15% concentration of ropivacaine to compare with 0.0625% bupivacaine and fentanyl in this study. Our study focused on pain relief on the first postoperative 48 hours after total knee replacement surgery because during this postoperative period and this kind of operation are the most painful. This first clinical study compared 0.15% ropivacaine and 0.0625% bupivacaine plus fentanyl 3 µg /ml showed equivalent efficacy on pain relief. However the patients in the R group consumed more volume of the study solution than those in the BF group respectively. In addition of those, PCEA with 0.15% ropivacaine did not show significant difference on motor block. Nevertheless in this study we did not test the motor block by allowing the patients to ambulate out of their beds because they were put on the long leg slab. However, patients were often encouraged to move in their beds to prevent lung atelectasis and deep vein thrombosis. According to the level of motor blockade in this study, approximately more than 90% of the patients in both groups had the Bromage's motor block score less than 2 at which this level of motor blockade, patients are able to ambulate in their beds by themselves or at least with little assistance. Although this kind of operation are performed in the elderly patient, none of the patients had cardiovascular or respiratory complications. The most common and most complaint of the opioid- related side effects is pruritus which troubles not only the patients but also the practitioner. Patients who received bupivacaine and fentanyl experienced more

pruritus and sedated than those who received ropivacaine alone which is the disadvantages of the addition of opioids. But this study did not show the differences in the incidence of vomiting and its severity which may be due to too small sample size. Although patients received bupivacaine and fentanyl group had more opioid-related side effects, they rated the quality of their pain therapy better than those who received ropivacaine alone. Because most of the patients in the ropivacaine group who rated their quality of pain therapy as fair complained of the feeling of uncomfortable heavy leg without the significant difference on Bromage's scale. Since the Bromage's scale is the qualitative assessment of motor blockade, there may not be as sensitive as the quantitative motor blockade assessment like electromyography. This kind of motor blockade evaluation is commonly used and much more practical. However none of them considered this treatment poor. In summary, PCEA with 0.15% ropivacaine is as effective as 0.0625% bupivacaine plus fentanyl 3 μ g/ml for postoperative pain control after total knee replacement surgery.