Paper #53

Mepivacaine vs. Bupivacaine Spinal Anesthesia: A Randomized, Double-blind Controlled Trial

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Introduction: Early ambulation after total hip arthroplasty (THA) predicts early discharge. Spinal anesthesia is preferred but can delay ambulation, especially with bupivacaine. Mepivacaine, an intermediate-acting local anesthetic, could enable earlier ambulation than bupivacaine. We hypothesized that patients who received mepivacaine would ambulate earlier than those who received hyperbaric bupivacaine or isobaric bupivacaine for primary THA.

Methods: This was a randomized, double-blind controlled trial of patients undergoing primary THA. Patients were randomized 1:1:1 to mepivacaine 52.5 mg, hyperbaric bupivacaine 11.25 mg, or isobaric bupivacaine 12.5 mg for spinal anesthesia. The primary outcome measure was ambulation between 3-3.5 hours. Secondary outcomes included return of motor and sensory function, postoperative pain, opioid consumption, urinary retention, transient neurological symptoms, intraoperative muscle tension, length of stay and 30-day readmissions. A priori power analysis required 44 patients per group. After testing for normality (Shapiro-Wilk test), continuous data were analyzed using analysis of variance (ANOVA) or Kruskal-Wallis, as appropriate, and categorical data were analyzed with chi-square.

Results: Of 154 patients, 50 received mepivacaine, 53 received hyperbaric bupivacaine, and 51 received isobaric bupivacaine. Patient characteristics were similar among groups. For ambulation at 3-3.5 hours, 35/50 (70.0%) of patients met this endpoint in the mepivacaine group, followed by 20/53 (37.7%) of hyperbaric bupivacaine and 9/51 (17.6%) of isobaric bupivacaine ($p<0.001$). Return of motor function occurred earlier with mepivacaine. Pain and opioid consumption were higher for mepivacaine patients in the early postoperative period only. 23/50 (46.0%) of mepivacaine, 13/53 (24.5%) of hyperbaric bupivacaine, and 11/51 (21.5%) of isobaric bupivacaine patients achieved same-day discharge ($p=0.014$). Length of stay was shortest in mepivacaine patients. There were no differences in complications.

Conclusions: Mepivacaine patients ambulated earlier and were more likely to be discharged the same day than both hyperbaric bupivacaine and isobaric bupivacaine patients. Mepivacaine could be beneficial for outpatient THA.

Notes