#3365 - Clinical Study / Posters

Impact Of Early Administration Of Celecoxib On Postoperative Pain, Range Of Motion And Sleep Quality In Patients Undergoing Total Knee Arthroplasty: A Randomized Controlled Trial

Orthopaedics / Knee & Lower Leg / Miscellaneous

Takeo Mammoto, Keiko Fujie, Noriko Taguchi, Koichi Hashimoto

Mitoyodo General Hospital, Mito, Japan

Keywords: Postoperative Pain, Knee Arthroplasty, Celecoxib

Background
Total knee arthroplasty (TKA) is associated with moderate-to-severe postoperative pain. Postoperative pain contribute to immobility-related complications, inability to participate in rehabilitation program, delayed recovery and delays to discharge from hospital.

Objectives
We conducted a randomized controlled trial to investigate the clinical effectiveness of celecoxib for pain control, ROM and sleep quality after TKA.

Study Design & Methods
This study was a prospective randomized controlled trial.
Patients in the celecoxib group received 400 mg of celecoxib orally at postoperative 2 hours, followed 6 hours later by 200 mg of celecoxib at the day of surgery. Patients in the control group received 400 mg of celecoxib orally at 9 am of the second day after surgery.All prior analgesic agents, including nonsteroidal anti-inflammatory drugs (NSAIDs), COX-2 inhibitor and opioids, were discontinued 2 days prior to surgery.
Surgery was performed under general anesthesia with a single injection of femoral and sciatic nerve block, were administered under ultrasound guidance and an electrical nerve stimulation devices.Postoperative analgesia was consist of patient-controlled analgesia (PCA) with fentanyl citrate.
Primary outcome measure
The primary outcome measure was patient-reported VAS pain score at 9 am on the second day after TKA. For secondary outcome measure, VAS pain scores was assessed at 9 am each day on postoperative days 1 through 7.Total fentanyl consumption was assessed. Incidence rates of PONV, frequency of taking antiemetics and consumption of rescue analgesics were assessed.
Active range of motion of the knee joint was assessed at 9 am on both the second and seventh days after surgery. Sleep quality was evaluated at postoperative 1, 2 and 7 days, monitored by SLEEPSCAN® (TANITA Corporation, Japan). Sleep quality including hours of nocturnal awakening, frequency of body motion and sleep efficacy. Sleep efficacy was defined as a rate of actual sleeping time in total bedtime hours.
The intention-to-treat (ITT) analysis was conducted for all patients who underwent randomization.
Non-parametric test with Wilcoxon signed rank test
was used to compare for differences.

Results

The celecoxib group had significantly lower median VAS pain score at 9 am than the control group at the postoperative day 1 and 2 (37.5 (0 to 96) vs 62 (9 to 100) for day 1, p=0.0062, 17.5 (0 to 89) vs 37.0 (0 to 90) for day 2, p=0.0126, respectively). .
The celecoxib group was superior to the control for overall fentanyl utilization(p=0.0010) . In terms of flexion angle, the celecoxib group had a significantly better median flexion angle at two and seven days after surgery ($p<0.0024$ for day 2 , $p<0.0123$ for day 7, respectively). There were no differences in extension angle at 2 and 7 days.The celecoxib group had significantly less in nocturnal awakening hours and frequency of body motion than the control group at the postoperative 1 day ($p<0.0065$ and p=0.0162).The celecoxib group was superior to the control for sleep efficacy (p=0.0231).

Conclusions

We found that VAS pain score at postoperative day 1 and 2 was reduced in the celecoxib group. The PCA-fentanyl consumption was lower in the celecoxib group. The celecoxib group also had better range of motion at postoperative day 2 and 7. In addition, sleep quality was better.