Safety and Efficacy of Intrathecal Morphine for Spinal Deformity Surgery

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Introduction: The use of intrathecal morphine has the potential to help alleviate the pain most often experienced by patients who undergo spinal surgeries. Some of the major complications of spinal deformity surgery are related to pain such as immobilization leading to potential vascular thrombosis and ileus. Previous studies have shown the use of epidural analgesia significantly lowered the postoperative pain score of patients who had surgery to repair diagnosed scoliosis. Intrathecal anesthesia is often used for an anesthetic in many surgeries today, with studies showing good pain control over the initial 24 hour period postoperatively. However, there were noted reactions to the use of morphine. The purpose of this study was to examine the pain relief experienced by the administration of intrathecal morphine for postoperative pain control, as well as any noted side effects, in patients undergoing spinal deformity surgeries in comparison to patients who did not receive intrathecal morphine for postoperative control.

Methods: The surgical case logs (October 2008 to October 2012) from three fellowship trained spinal deformity surgeons from a single academic medical center were reviewed retrospectively. This included cases with more than five levels of fusion with instrumentation or a surgery that involved an osteotomy. Theses records were queried and data collected included: patient demographic data, gender, age at the time of surgery and surgical data. Included in the surgical data were: the number of levels of fusion; the postoperative pain scores obtained hourly over the first 24 hours postoperatively; and rates of any noted side effects including puritis, nausea, nausea medication use, vomiting, ileus, constipation, urinary retention, change in neurologic examination and rate of infection. The hourly postoperative pain scores were recorded and measured by nurses specifically trained to obtain pain scores pain scores. The patients (n=17) were divided into 2 groups: 8 patients were administered intrathecal morphine and 9 patients received no morphine. ANOVA and Fisherâ€™s exact tests were used to calculate any statistical significance with p< 0.05 considered significant.

Results: For patients who received intrathecal morphine, the maximum pain scores had a mean of 5.6(standard deviation=4.2) and p=0.4266 and total 24 hour postoperative pain scores had a mean 69.3(standard deviation =57.8) and p=0.9189. Patients who did not receive intrathecal morphine had total pain scores of 3.9 (standard deviation=4.5) and 65.7(standard deviation=79.7) (Table 1) Though the results were not statistically significant, there was a substantial trend toward decreased mean pain scores in the first 10 hours for the intrathecal morphine group (n=8) (Figure 1). There was no statistical difference in the rate of side effects between patient groups.(Table 2) No spinal fluid leaks or neurological deficits were noted that were associated with the use of intrathecal morphine.
Conclusion: The use of intrathecal morphine did not significantly appear to reduce postoperative pain in patients when compared to intravenous or oral narcotics. There was a potential trend toward reduction in postoperative pain associated during the first 10 hours postoperatively, but this did not reach statistical significance. However, it was noted that intrathecal morphine was safe to use in postoperative spinal deformity surgeries as there was no statistical significance in potential side effects. A potential limitation of the study is the small sample size and there may not have been adequate power to detect a statistically significant difference in the postoperative complication rate or change in postoperative pain scores.