Title: Intrathecal Morphine for Idiopathic Scoliosis Surgery: Does Gender or Race Impact Safety or Effectiveness?

Author(s): Tripi P, Sandadi J, Son-Hing J, Poe-Kochert C, Thompson G

Affiliation(s): Rainbow Babies & Children’s Hospital, University Hospitals Case Medical Center, Cleveland, OH

Introduction: Previously we reported that pre-incision intrathecal morphine 14 mcg/kg (range 9 – 19 mcg/kg) provided safe and effective initial postoperative analgesia in patients with idiopathic scoliosis (IS) undergoing posterior spinal fusion (PSF) and segmental spinal instrumentation (SSI). Patients received a continuous intravenous morphine infusion once they reported pain. In a follow-up study, we examined the same population of patients to assess whether our pain management approach was equally safe and effective across gender and racial groups.

Methods: We studied 287 patients who had received 9-19 mcg/kg intrathecal morphine, which was considered a “moderate” dose group in our prior study of 407 patients with IS undergoing PSF and SSI. Demographics of the study group included 240 female and 47 male patients, and 224 Caucasian (CA) and 63 African-American (AA) patients. Six patients of other ethnicities were excluded. Postoperative visual analog pain scores (VAS), time to first intravenous morphine following surgery (IT duration), total intravenous morphine in the first 48 postoperative hours (total IV morphine), and postoperative complications were analyzed.

Results: For female and male gender, mean VAS pain scores in the post-anesthesia care unit (PACU), and at 12 h, 1 d, 2 d, and 3 d postoperatively were 0.48 and 0.56, 3.2 and 2.4, 4.5 and 3.7, 4.5 and 3.6, and 4.6 and 3.9, respectively. Mean IT duration was 16.65 and 16.72 hours, total IV morphine was 1.49mg/kg and 1.49 mg/kg, respiratory depression and PICU admission occurred in 10 (4.1.%) and 3 (6.4%) patients, and nausea/vomiting/pruritis (N/V/P) occurred in 78 (31.7%) and 12 (25.5%) patients, respectively.

For CA and AA patients, mean VAS pain scores at the above intervals were 0.48 and 0.46, 3.2 and 2.6, 4.5 and 3.9, 4.4 and 4.0, and 4.6 and 4.0, respectively. Mean IT duration was 16.53 and 17.12 hours, total IV morphine was 1.54mg/kg and 1.30mg/kg, respiratory depression and PICU admission occurred in 9(4.0%) and 4(6.3%) patients, and N/V/P occurred in 77 (34.4%) and 11 (17.5%) patients, respectively.

Student’s t-test and Fisher exact test demonstrated significant differences between groups for the following variables: postoperative VAS pain scores at 12 hours, 1, 2, and 3 days were higher in females than males. Total IV morphine and VAS pain scores at 12 hours, 1, and 3 days were lower in AA than CA patients. Total IV morphine and VAS pain scores at 12 hours, 1, and 3 days were lower in AA than CA patients.

Discussion: Regardless of race or gender, pre-incision intrathecal morphine 14 mcg/kg (range 9 – 19 mcg/kg) coupled with postoperative continuous morphine infusion provides safe and effective postoperative pain management in children with IS undergoing PSF and SSI. In the immediate postoperative period, all groups were similar with excellent analgesia. Mean VAS pain scores were less than five in all groups throughout the remainder of the postoperative period. Of interest, female patients reported higher pain scores than males, but received the same total dose of postoperative morphine. AA patients had lower pain scores and lower postoperative morphine requirements. Reasons for these differences are unclear and warrant further study.

References: