A Retrospective Review of the Efficacy and Safety of Epidural Narcotic Infusions for Post-operative Pain Control in Pediatric Patients following Spinal Fusion for Idiopathic Scoliosis

V Gauger, M.D. R Hong, M.D. I Sohanpal, MB ChB E Schweger, M.D. and C Burke B.S.N. R.N.

Department of Anesthesiology at the University of Michigan Medical School, Ann Arbor, MI

C.S. Mott Children’s Hospital

Introduction

Posterior spinal fusion (PSF) with segmental instrumentation is a commonly performed orthopedic procedure to correct idiopathic scoliosis. While the safety and efficacy of this surgical technique has been supported by the scientific literature, adequate and safe post-operative analgesia remains a challenge for surgeons and anesthesiologists, often resulting in suboptimal levels of analgesia for these patients. The management of postoperative pain is fundamental to patient safety and outcome, and careful attention must be given to individualize pain management strategies.

A total of 53 patients were included in the study. Out of which 10 (17.9%) were male and 43 (82.1%) were female. Average age was 14.743 with a SD of 2.012. All patients used the numerical pain rating scale ranging from 0 to 10.

Methods

Following ACRC review and IRB approval, electronic medical records of all developmentally intact, ASA I, II, and III children with a diagnosis of Idiopathic Scoliosis who underwent elective posterior spinal fusion surgery at our institution during the period of January 2011-October 2011 were reviewed. Patients who were cognitively impaired, kept intubated postoperatively, or had a documented hydromorphone allergy were excluded. As this study is a retrospective chart review and patients could be treated differently, only the non-opioid treatments were used.

Results

A total of 53 patients were included in the study. Of which 10 (17.9%) were male and 43 (82.1%) were female. Average age was 14.743 with a SD of 2.012. All patients used the numerical pain rating scale ranging from 0 to 10.

Discussion

Studies that compared combination of local anesthetic and opioid administered via the epidural route against intravenous infusions for postoperative pain in PSI patients, have found the mixture of local anesthetic and narcotic to be a superior form of pain control (3, 4). However, at our institution a case of a transient neurologic deficit which may have been masked by the local anesthetic in the epidural solution resulted in our neurosurgeons, neuroanesthesiologists, and pain service nurses agreed to trial an epidural infusion containing solely hydromorphone for postoperative analgesia in these patients. It was felt that this method may provide better analgesia than IV-PCA. This study is a retrospective chart review of our experiences using this method of analgesia.

Discussion (cont)

This study indicates that the use of hydromorphone epidurals for post-operative pain control following posterior spinal fusion is a safe and effective method of analgesia. Although this study is limited by the nature of a retrospective review, it is logical to conclude that the use of epidural narcotic infusions presents a reasonable, and possibly superior, alternative to IV-PCA for post-operative analgesia. Further prospective, randomized trials are indicated to further explore the side effect profile and efficacy of this method of analgesia compared to IV-PCA for adolescents undergoing PSF.

References