A Comparison of intrathecal diamorphine with systemic analgesia following adolescent idiopathic scoliosis surgery

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Introduction

Scoliosis surgery can result in severe post-operative pain. Currently post-operative pain management strategy consists of systemic opioids. High doses of opioids administered to achieve satisfactorily analgesia result in adverse effects such as nausea and vomiting, constipation, pruritus and respiratory depression. Recently, alternative methods of delivering analgesia have been studied. Intrathecal morphine following spinal surgery is associated with an increased incidence of late respiratory depression. There are currently no studies that compare intrathecal diamorphine with systemic methods of analgesia following scoliosis surgery. The aim of our study is to compare the safety and efficacy of spinal diamorphine with systemic analgesia in patients undergoing adolescent idiopathic scoliosis surgery.

Material and methods

Study design

- Retrospective comparative study

Patient sample

- Sixty children under 18 years of age with adolescent idiopathic scoliosis undergoing posterior spinal fusion performed by 2 surgeons were included.
- Spinal diamorphine was injected by the anaesthetist with the patient under general anaesthesia before the surgical incision

Outcome measures

- Postoperative analgesic requirement
- Immediate recovery and postoperative pain scores
- Estimated blood loss
- Side effects
- Critical care and hospital length of stay
- Indicators of gastrointestinal function

Results

- Mean dose of diamorphine injected intrathecally- 1.48 mg (range 1-2 mg).
- 81% patients in the diamorphine group had mild pain (<2/10 of visual analogue scale) in recovery compared to 7% in the non diamorphine group
- 59% patients had no or mild pain up to 24 hours postop compared to 6.7% in non diamorphine group
- Diamorphine group had less PCA opioid consumption (86.8 mg vs. 111mg)
- The length of stay in critical care and hospital were similar in both groups
- 2 patients in the diamorphine and 1 in the nondiamorphine group required naloxone bolus for respiratory depression without airway intervention
- Incidence of pruritis higher in diamorphine group (67% vs. 33%)

	Diamorphine	Non Diamorphine
Number of patients	30	30
Age (years)	14.7	15.6
Weight (kg)	57	64
Estimated Blood Loss	442	413
Bowel opening (post op days)	5.2	4.8
Hospital stay	7.3	6.9

Conclusions

- Spinal diamorphine provides better analgesia than conventional methods following lumbar spinal surgery.
- Spinal diamorphine is safe even in the dose of 20-30 micrograms/ kg as administered in this study.
- Randomised controlled trials are needed to find out the optimal dose of intrathecal diamorphine which would maximise the benefits without undue increase in side effects.