

[PR2-118] 'Comparison of epidural Ropivacaine to epidural Ropivacaine with Hydromorphone following orthopedic surgery of the lower limbs, hips and/ or pelvis in pediatric patients with neuromuscular disorders. A retrospective study examining quality of analgesia and side effects

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#### INTRODUCTION:

Epidural solutions with narcotics have been shown to provide better analgesia than solutions with local anesthetics alone (1). Children with neuromuscular (NM) disorders often have procedures of the lower extremities necessitating adequate analgesia. However, the inclusion of narcotics in the epidural solution may increase the risk of side effects such as nausea, vomiting, sedation and respiratory depression (2). Diazepam, commonly, used to treat muscle spasms in this population compounds the fear of respiratory depression especially with narcotics given via the epidural route. It is unclear if the addition of hydromorphone to the epidural solution offers greater analgesia compared to local anesthetic alone in this group of children. The goal of this study is to examine the analgesic effects and side effects between ropivacaine 0.1% & ropivacaine 0.1% with hydromorphone in children with NM disease having lower extremity procedures.

#### METHODS:

After obtaining IRB approval, we reviewed the use of epidural analgesics in the peri-operative period in children with NM disorders following lower extremity orthopedic surgery. Data collected included description of procedure, co-morbid conditions, the type and volume of local anesthetic used, pain scores, and the number of interventions in any medications. Pain scale used (FLACC or numeric pain scale) was dictated by the cognitive status of the patient.

#### RESULTS:

We collected the data for 65 patients with NM disease who underwent lower extremity corrective surgery. The patients were divided into two groups. Group (G) I, 33 patients, received epidural ropivacaine 0.1%, intravenous morphine ( prn) and diazepam for spasms. G II, 32 patients, received an epidural ropivacaine 0.1% with hydromorphone 5 mcg/ml as well as diazepam for spasms. Pain scores were significantly higher in G I on day 0 (day of surgery, after the patients left PACU). In G I, the amount of diazepam use was higher on day 0 and Day 1. Also, the amount of local anesthetic used was higher indicating higher infusion rates and additional bolus doses for pain and G I also had greater morphine use. Three patients in G I were switched to a higher local anesthetic concentration from Day 1 and were not included in the analysis. The number of changes made to diazepam dosing was also greater in G I, but did not achieve significance levels ( $p=.08$ ). There was no difference in side effects (respiratory depression, nausea/vomiting or pruritis) between the groups.

#### DISCUSSION:

In this study, use of 0.1% ropivacaine alone when compared with 0.1% ropivacaine with hydromorphone resulted in higher pain scores on day of surgery as well as greater use of diazepam and morphine. Our preliminary results, comparing the two epidural regimens, do not support use of 0.1% ropivacaine.

#### REFERENCES:

1. Kopacz DJ, et al. *Anesth & Analg* 1999
2. Vetter, T, et al. *Anesth & Analg* 2007

	Day 0			Day 1			Day 2		
	Group I R N=33	Group II R+H N=32	p-value	Group I R N=30	Group II R+H N=31	p-value	Group I R N=27	Group II R+H N=28	p-value
Local Anesthetic (mg/kg)	0.28 (0.16-0.45)	0.24 (0.11-0.39)	0.02	0.30 (0.17-0.66)	0.25 (0.13-0.39)	.03	0.31 (0.17-0.66)	0.25 (0.14-0.39)	.01
MSO4 (mg/kg)	0.16 (0-0.60)	0.00 (0-0.05)	.00	0.26 (0-1)	0.02 (0-0.30)	.00	0.23 (0.00-0.90)	0.08 (0-0.50)	.01
Nubain (mg/kg)	0.02 (0-0.20)	0.04 (0-0.20)	.12	0.01 (0-0.25)	0.11 (0-0.8)	.00	0 (.00-.05)	0.05 (0-0.25)	.00
Valium (mg/kg)	0.34 (0-0.70)	0.24 (0-0.60)	.02	0.57 (0-1)	0.45 (0.07-1)	.04	0.45 (0.00-1.00)	0.35 (0-0.80)	.14
Pain Score	2.5 (0-8)	1.2 (0-4.7)	.00	2.1 (0-6)	2.2 (0-9.5)	.77	1.70 (0-5.6)	1.3 (0-9)	.30

Table I: Data from Day of surgery after patient left PACU (Day 0), and postoperative days 1 and 2, Means and (Minimum-Maximum) are reported. R = Ropivacaine 0.1%, R+H = Ropivacaine 0.1% with Hydromorphone 5 mcg/ml. Analytical method used is Student T-Test. All data were analyzed by SPSS-18