[NM-259] Perioperative use of Gabapentinoids in Children for Spinal Fusion Surgery

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Introduction

Perioperative use of gabapentinoids has been found to have a beneficial effect on postoperative pain. This study aims to evaluate the perioperative use of pregabalin and gabapentin in children with idiopathic scoliosis undergoing posterior spinal fusion (PSF).

Methods

Following IRB approval, data from 132 patients undergoing PSF for idiopathic scoliosis were collected retrospectively. Patients were divided into one of three groups:

Group N: No gabapentonoid: 42 patients
Group G: Gabapentin only: 45 patients
Group P: Pregabalin only: 45 patients

For Group G patients, one dose of Gabapentin (12.5 mg/kg up to 1000 mg) was given one hour before surgery, and continued postoperatively (100 mg – 200 mg TID) until discharge.

For Group P patients, one dose of Pregabalin (100–150 mg) was given one hour before surgery, and continued postoperatively (50–75 mg BID) until discharge.

The parameters observed were: the amount of propofol used intraoperatively, incidence of EEG burst suppression, time to emergence, morphine use on postop day 0 and day 1, pain scores (VAS), pruritis, nausea/vomiting, time to ambulation and length of hospital stay.

Results

Data was analyzed using ANOVA for quantitative data, posthoc analysis by Tukeys test and Chi-square analysis used for non parametric data. Significance assumed at $P<0.05$ (IBM, SPSS, Armonk, NY).

All groups were similar in demographics. Intraoperative propofol used (mcg/kg/min) was lower in Group P as compared to Groups N or G. (Table)
Incidence of EEG burst suppression was not different among groups.
Times to emergence were similar between Groups N and G, but Group P had significantly shorter wakeup times than Group G.
The difference in morphine use between groups was observed only on postop day-1. Groups G and P had decreased morphine use as compared to Group N. There was no difference in morphine use between Group G and P.
Time to ambulation following surgery was shorter in groups P and G.
There were no difference among groups in pain scores (VAS), pruritis, nausea/vomiting and length of stay.

Conclusion

Gabapentin or pregabalin use results in earlier ambulation, reduction in opioid use on postop day one, faster transition to oral pain medications and advancement of diet. No differences were seen in regards to opioid related side effects, pain scores and length of stay.
We noticed that the amount of propofol used was significantly lower in P group. We believe that since it was the last group studied, the anesthesia provider, by then, had become familiar with the significant sedative effect of gabapentinoids and hence preemptively reduced propofol infusion rates. This led to shorter emergence time from anesthesia as compared to the other two groups.

References:-

1. Tippana E M, et al. Anesth Analg 2007; 104: 1545-56.
2. Rusy L M, et al. Anesth Analg 2010; 110:1393-8.
3. Clark H, et al. Anesth Analg August 2012 115:428-442.

Parameter		No Gabapentin	Gabapentin	Pregablin	P value
No. of patients		42	45	45	
Gender (M/F)		36/6	31/14	33/12	NS**
Time to Emergence (min)		13.31 ± 8.5	17.33 ± 13.1	11.6 ± 8.2	G vs P: 0.024*
Propofol (mcg/kg/min)		158.78 ± 29.9	156.92 ± 24.0	137.87 ± 26.5	G vs P: 0.003* N vs P: 0.001*
Morphine (mg/kg/hr)	Morphine POD 0	0.048 ± .02	0.04 ± .02	0.047 ± .02	NS**
	Morphine POD 1	0.04 ± .01	0.03 ± .01	0.03 ± .00	N vs G: 0.00* N vs P: 0.001* G vs P: NS**
Ambulation (# of patients)	Day 1	11	20	25	N vs P: 0.007*
	Day 2	30	22	20	G vs P: 0.459**
	Day 3	1	3	0	N vs G: 0.05*
Transition to oral on POD 1 (# of patients)		3	22	26	G vs N: 0.000* P vs N: 0.000*
EEG Burst Suppression		3	4	1	NS**

*P value < 0.05; **NS (not significant)