Does chronic GABA analog usage confer acute post operative pain reduction after spinal fusion surgery? A retrospective analysis.

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BACKGROUND

Gabapentin and Pregabalin (G/P) are anti-seizure drugs that possess analgesic effects and are prescribed as adjunctive therapy for neuropathic pain. There is an interest in using G/P in the peri-operative setting. Spinal spondylosis, stenosis, degenerative disk disease and attendant pain syndromes are often treated surgically. Long-term pre-operative G/P use might mitigate post-operative pain.

HYPOTHESIS

We hypothesized that long-term pre-operative Gabapentin/ Pregabalin use mitigates post-operative pain after spinal fusion surgery. Utilizing a proprietary hospital electronic record repository, we investigated the effect of pre-operative long-term G/P on immediate (24 hour) post-operative pain scores.

METHODS

With IRB approval, we retrospectively identified the records of all the patients who had spinal fusion surgery performed by a single surgeon from 01/2011 to 09/2013. Within this cohort, we selected those patients who were given a prescription for G/P within 90 days prior to the index surgery. A mean post-operative pain score was derived by extracting the pain scores for the first 24 hours after surgery from the nursing records. We divided the patients into the anterior cervical fusion group with and without pre-operative G/P and a posterior fusion group, with and without pre-operative G/P. Additional information was collected by reviewing the patients' medical records. All the eligible patients from the G/P group and 30 randomly selected patients from the non G/P group were included in the analysis. Continuous variables such as pain scores, age and length of surgery were analyzed using Wilcoxon- Mann-Whitney test and dichotomous variables such as chronic opioid usage, intraoperative anesthesia regime and sex were analyzed using chi-square analysis.

RESULTS

During the 21 months analyzed, the surgeon performed a total of 394 spine surgeries. Minimally invasive microdiscectomy operations (47 cases), simultaneous anterior and posterior fusion (15 cases) and costotransversectomy (2 cases) were excluded from analysis. The overall mean pain score in the G/P group (n=27) was 4±1.9 as compared to 3±1.9 (n=303) to the non G/P group (p=0.012). When stratified by anterior (n=16) and posterior (n=15) fusion, the median (25%-75%) scores in the anterior group without G/P 2(0-4) and with G/P 4(2-6) were different (p=0.029). However, the median (25%-75%) scores in the posterior group without G/P 4(2-6) and with G/P 4(3-6) were not different (p=0.593) (Table).

394 spine surgeries over 21 months

162 Anterior

168 Posterior

With G/P:Mean Pain Score 4 (2-6)

Without G/P: Mean Pain Score 2 (0-4)

With G/P: Mean Pain Score 4 (3-6)

Without G/P : Mean Pain Score 4 (2-6)

DISCUSSION

It is generally accepted that Gabapentinoids as premedication before surgery improve postoperative analgesia. It is not known whether chronic usage confers the same benefit. The 24 hour Pain Scores in the posterior G/P yes/no groups are similar, but in the anterior group they are statistically significantly different; the difference in the length of surgery and pre-operative opioid usage can explain this difference. We conclude that chronic use of G/P in the period preceding spine surgery does not lower the 24 hour composite Pain Score. Chronic G/P use may perhaps be considered a marker for chronic pain. TIVA with Remifentanil may predispose to post-operative opioid-induced hyperalgesia and difficulty managing pain. There were no statistical differences in the number of patients anesthetized with Remifentanil relative to Sufentanil in any of the analyzed groups.

CONCLUSION

Patients on chronic preoperative Gabapentinoids (G/P) who underwent posterior spine fusion surgery by one surgeon did not have a decrease in the composite 24 hour pain Score. The anterior spine fusion patients receiving G/P had higher Pains Scores than the no G/P group; they differed with respect to pre-operative opioid use and length of surgery.

Characteristic	Posterior Fusion Group			Anterior Fusion Group		
	Without Gabapentin/Pregabalin (N 30)	With Gabapentin/Pregabalin (N 15)	P value	Without Gabapentin/Pregabalin (N 30)	With Gabapentin/Pregabalin (N 16)	P value
Age	62 (54-71)*	58 (48-66)*	0.386	59 (50-67)*	52 (36-70)*	0.572
Sex (F)	53%	60%	0.671	40%	53%	0.292
BMI	28 (24- 30)*	29 (23-34)*	0.109	29 (23-55)*	29 (26-31)*	0.586
Length of surgery (min)	233 (175- 287)*	236(200-290)*	0.366	112 (81-148)*	165 (94-227)*	0.012**
Chronic opioid use (Yes)	50%	53%	0.886	6.7%	50%	0.001**
24 hour Pain Score	4 (2-6)*	4 (3-6)*	0.593	2 (0-4)*	4 (2-6)*	0.029**
Intraoperative Anesthesia Used						
Remifentanil/Propofol	63%	35.7%	0.087	86%	62.5%	0.058
Sufentanil/Propofol	37%	64.3%		14%	37.5%	

Table: Patient Demographics

* 25th and 75th percentile **statistically significant