Postoperative Use of Long-acting Intraliposomal Bupivacaine as a Means to Lower Narcotic Use and Length of Stay After Posterior Approach Spinal Surgery

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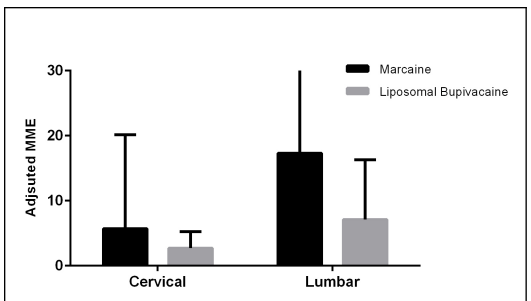
Introduction

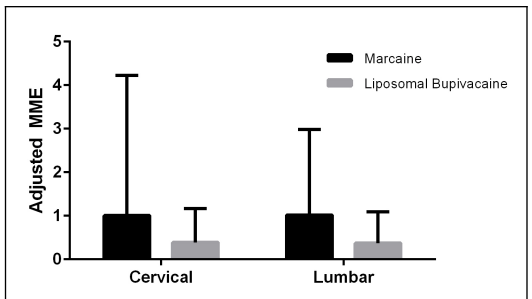
Decompressive laminectomy and fusion is a common procedure for treatment of multilevel cervical and lumbar spine pathology. With posterior approaches there is considerable manipulation of the paraspinal muscles and disruption of the normal spinal anatomy resulting in significant postoperative pain. Previous studies have demonstrated the efficacy of perioperative wound infiltration with liposomal bupivacaine, a long acting local anesthetic, for analgesia in hemorrhoidectomy, bunionectomy and total knee arthroplasty. Therefore, the authors seek to evaluate the use of liposomal bupivacaine in posterior spinal surgery as no prior studies have evaluated their beneficial use in spinal surgery.



Mean Daily Post-Operative Analgesia adjusted for PCA and Levels Exposed.

Methods

A retrospective cohort-matched chart review of 531 consecutive cases over 17 months (October 2013-February 2015) within an administrative database for spinal surgery procedures performed by a single surgeon (JJ). Inclusion criteria for analysis were limited to those patients receiving posterior approach laminectomy fusion for cervical or lumbar spondylolisthesis and/or stenosis. The use of liposomal bupivacaine was instituted on all posterior approach cervical and lumbar spinal surgery patients beginning January 1, 2014 creating 2 treatment conditions; liposomal bupivacaine or marcaine. In both cervical and lumbar cohorts, we evaluated hospital length of stay (LOS), complications and postoperative narcotic use.

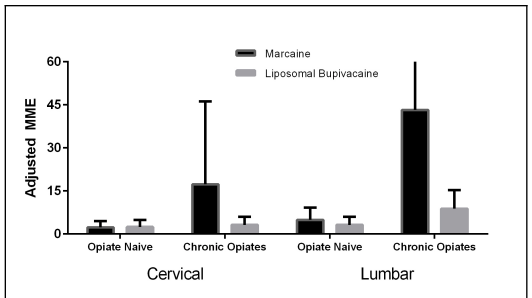


Mean Daily Post-Operative Rescue Pain Medication adjusted for PCA and Levels Exposed

Results

116 patients were found to meet our inclusion criteria for this study, 52 in the cervical cohort and 64 in the lumbar cohort.

For both cervical and lumbar cases, patients receiving marcaine required approximately twice the adjusted MME per day compared to the liposomal bupivacaine groups (5.7 vs 2.7, p=.27 and 17.3 vs 7.1, p=.30). IV rescue pain medicine requirements were greater for marcaine compared to liposomal bupivacaine in both cervical (1.0 vs .39, p=.31) and lumbar (1.0 vs .37, p=.08) cohorts as well. However, none of these differences were found to be statistically significant. There were no differences in length of stay, complication or infection rates either. A subgroup of analysis in both cohorts of opiate naïve vs dependent patients found that those patients who were naïve had no difference in opiate requirement. In chronic opiate users, there was a striking increase in opiate requirements for the marcaine group compared to liposomal bupivacaine, however this was also not significant.



Mean Daily Post-Operative Analgesia in Opiate Naïve and Opiate Dependent Patients

Conclusions

Liposomal bupivacaine did not significantly decrease perioperative narcotic use or length of hospitalization, although there was a trend towards decreased narcotic use compared to marcaine. While the results of this study do not support routine use of the agent, theremay be a benefit in the subgroup of patients who are chronic opiate users. Future prospective randomized controlled trials, ideally with dose-response parameters, must be performed to fully explore the efficacy of liposomal bupivacaine as some evidence suggests that does of 266 mg may fall below the threshold for clinically relevant effects.

References

Bramlett K, Onel E, Viscusi ER, et al. A randomized, double-blind, dose-ranging study comparing wound infiltration of DepoFoam bupivacaine, an extended release liposomal bupivacaine, to bupivacaine HCl for postsurgical analgesia in total knee arthroplasty. Knee 2012;19(5):530

Candiotti, K. (2012) Liposomal Bupivacaine: An Innovative Nonopiod Local Analgesic for the management of Postsurgical Pain. Pharmacotherapy; 32 (9 Pt 2):19S-26S

Devin CJ, McGirt, MJ. (2015) Best evidence in multimodal pain management in spine surgery and means of assessing postoperative pain and functional outcomes. Journal of Clinical Neuroscience 22: 930-938

Ong CK., Lirk P, Seymour RA, Jenkins BJ. (2005) The efficacy of Preemptive Analgesia for Acute Postoperative Pain Management: A Meta Analysis. Anesthesia Analgesia. 100(3): 757-773.