PAIN CONTROL AFTER SPINAL SURGERY AFTER USING A "COCKTAIL" OF LOCAL ANESTHESIA

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BACKGROUND

Treatment of chronic lower back pain is often a challenge for practitioners and patients alike, with few patients returning to the same level of functioning. The goal of chronic back pain treatment is therefore not curative, but is intended to reduce pain and improve functioning to an acceptable level.

Among pharmacologic and conservative treatment, there is also a place for surgery as a treatment for chronic back pain. Not all patients with chronic back pain are candidates for surgery, but it may offer relief for those with progressive muscle weakness and cauda equina syndrome. Several surgical options are available, such as arthroscopy, laminectomy or fusion, and will depend on the cause and severity of the back pain. Outcomes are generally favourable, as long as the patient fulfills specific surgical criteria.[1]

Opioids are administered during and after spinal surgery, and the patient usually undergoes general anaesthetic. The excess use of opioids is concerning for many reasons, including potential side effects and long-term addiction. The use of a local anaesthetic, bupivacaine, administered at the time of surgery has been shown to reduce postoperative pain following total knee arthroscopy.[2] Liposomal bupivacaine is a long-acting local anaesthetic that acts for 72 hours, and has been shown to reduce opioid consumption, improve patient satisfaction and reduce hospital stay lengths.[3] Currently, liposomal bupivacaine is only approved in the US for bunionectomy and hemorrhoid removal, but it's larger implications in surgery are being studied.

LITERATURE REVIEW

There are a good number of studies published on liposomal bupivacaine as a way to reduce postoperative pain in patients with other types of orthopaedic surgeries, but a stark lack in literature regarding spinal surgery. In the past 5 years, there have been 93 clinical trials and reviews published on bupivacaine administration with total knee arthroscopies and 32 published on total shoulder arthroscopies. We can contrast this with the 5 clinical trials that were found in the PubMed database about lumbar disc

surgery in the past 5 years. The number of studies and the fact that there have been no comprehensive literature reviews published, indicates that there is an opportunity for research to be done in this area.

In one 2017 study, patients who underwent a lumbar fusion reported lower pain as measured by VAS pain scale, used less narcotics in the first 24 hours after surgery, and stayed for a shorter time in the hospital.[4] An earlier (2016) study on single level microdiscectomy patients found that while using bupivacaine post-surgery lowered the length of time that a patient used narcotics for, it did not reduce the total equivalent dose of narcotics or reduce pain as measured by the VAS pain scale.[5] Single level microdiscectomy procedures are less invasive than lumbar fusions, and may account for the difference in results between these studies, which was postulated by Puffer, et al (2016).[5] This idea is challenged by a retrospective study by Grier, et al. (2016).[6] This study evaluated both decompression and fusion for cervical and lumbar vertebrae. Within the lumbar cohort, there was a decreased use of narcotics in those patients who received liposomal bupivacaine, but it was not large enough to achieve statistical significance.[6]

STUDY DESIGN

Purpose: Noting the apparent lack of research done in the area of liposomal bupivacaine after spinal surgery in improving pain control, our goal was to contribute to the research pool by conducting our own study on the efficacy of long-acting liposomal bupivacaine versus a standard short-acting local anaesthetic.

Design: The study will be conducted in a single-blind prospective trial. The surgeon (PdM) will be aware which patients are receiving the liposomal bupivacaine, but the data collector will not. VAS pain scales and analgesics administered will be collected every 24 hours, for 48 hours. BMI and age will be evaluated in control and experimental groups.

Patient Sample: Adult patients presenting with lumbar stenosis or compression, undergoing a lumbar discectomy, fusion or arthroscopy who are opiate naive.

Outcome Measurements: VAS pain scale and analgesics administered will be collected starting immediately after the surgery for 48 hours after the surgery, every 24 hours. Analgesics measured includes hydromorphone, acetaminophen, codeine, morphine, ketorolac and toradol.

CONCLUSIONS

Unfortunately, due to the lack of operating room time available during my HFTS and the month after, we were only able to collect data from 4 patients. We had predicted that we would have 30 patients by this time, but evidently that is not the case. I cannot perform any statistical evaluations on a sample size this small, and therefore can't comment on the efficacy of liposomal bupivacaine in narcotic use and pain control following surgery. Dr. de Muelenaere and I will continue to work on this project together, as there is a need for more research in this area and the benefits of reduced narcotic use after surgery would be significant for patients and the health care system.

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