TITLE: The Effect of Intrathecal Fentanyl on Reported Pain and Vasoconstriction Associated with the Cold Pressor Test

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The cold pressor (CP) test has been used as an experimental pain model to evaluate the effectiveness of a variety of analgesics. Systemic narcotics may decrease both reported pain and hypertension associated with the CP test, but only in doses sufficient to cause supraspinal side effects. There have been conflicting reports on the effect of epidural narcotics on the CP test. This study was designed to evaluate the effect of a spinally administered narcotic on the CP test.

Ten subjects undergoing a diagnostic spinal for benign chronic pain were used. Subjects with diabetes or a peripheral neuropathy were excluded from the study. A photoplethsmography (PPG) probe was attached to the great toe to continuously monitor the pulse tracing. A baseline PPG was obtained, effect of a valsalva maneuver on the PPG recorded, and then the foot opposite the probe was placed in ice water for one minute. The PPG was continuously monitored and reported pain levels obtained. The feet were allowed to rewarm, baseline PPG recorded, and fentanyl, 35mcg, injected into the lumbar CSF. Valsalva maneuver was repeated. One foot was again immersed in ice water and effect on the PPG tracing, reported pain, and any side effects were noted. Statistical analysis was done using the Wilcoxon's rank sum test.

The CP test caused intense vasoconstriction prior to injection of fentanyl. Intrathecal fentanyl blocked the vasoconstriction associated with the CP test. The fentanyl also significantly decreased reported pain from the CP test but did not change the hemodynamic effect of the valsalva maneuver. There were no side effects associated with intrathecal fentanyl.

Intrathecal fentanyl blocked vasoconstriction and decreased the pain associated with the CP test without supraspinal side effects. The lack of effect on vasomotor activity in response to the valsalva maneuver indicates sympathetic efferent pathways were intact and remained unaffected by the fentanyl. It is likely that these results represent a direct spinal action of intrathecal fentanyl on a noxious-sympathetic reflex. Intrathecal fentanyl was able to abolish the vasomotor response associated with this reflex. This model may have important applications for the understanding and treatment of clinical pain conditions and the physiologic response that pain evokes.

Title: BACTERIOLOGICAL COMPARISON OF CONTINUOUS EPIDURAL POSTOPERATIVE ANALGESIA WITH AND WITHOUT THE USE OF DISPOSABLE MILLIPORE FILTERS

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Carefully conducted collection of bacteriologic data involving continuous epidural analgesia for longer than 8 hours is absent in the current literature. Abouleish et al[1] reported that the presence or absence of a millipore filter was irrelevant to the number of positive cultures in obstetric patients. With the growing use of epidural analgesia extending into the post-op period, bacteriological confirmation of safety is even more important. We studied two groups of patients receiving continuous post-operative epidural analgesia with fentanyl or a fentanyl/bupivacaine combination. Group I utilized an inline disposable 0.22 micron filter while in Group II the filter was omitted. Patients were prospectively randomized into Group I or II by date. Bacteriological samples were collected from the following four sites after the skin entry site was sterilized with 70% alcohol:

1. The terminal 2 centimeters of the epidural catheter.
2. The 2 centimeters of the catheter extending 0.5 cms. from the skin entry site.
3. Inside the catheter hub.
4. The proximal orifice of the filter, if used.

The samples were incubated for aerobic and anaerobic growth. There were four positive cultures in Group I (n=27) and seven positive cultures in Group II (n=23). There was no clinical evidence in any patient of catheter related sepsis. Chi square testing on Group I and II showed no difference in the incidence of positive cultures, gender, surgical site or drugs used. T-tests showed no difference in mean ages or mean durations between groups.

In-line millipore filters conveyed no added benefit in our post-operative patients.

Reference

1.Abouleish E, et al. Are bacterial filters needed in continuous epidural analgesia for obstetrics? Anesthesiology 46:351-354, 1977.