Opioid Induced Hyperalgesia: does it occur after spinal fentanyl for cesarean section?

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Background: Large doses of iv opioids may induce acute hyperalgesia, increased pain scores and analgesic consumption (1). Opioid induced hyperalgesia (OIH) has been noticed in one animal study with spinal morphine (2). To date, no human study evaluated the occurrence of OIH after spinal opioids nor has the effect of fentanyl or morphine given during spinal anesthesia for CS been evaluated. Since OIH has been associated with increased post-op pain, wound hyperalgesia and chronic post-op pain, evaluating OIH in the setting of CS is of interest. Prior to randomizing women to receive a standard fentanyl (F) dose (25mcg) versus low dose (5mcg), we designed a pilot study to evaluate OIH in our current clinical practice.

25 women undergoing elective primary or repeat CS under spinal anesthesia were included. Spinal anesthetic dose was: hyperbaric bupivacaine 12.5mg, morphine 100mcg and F 25mcg. Women with residual chronic pain after their 1st CS were not enrolled. Outcome measures included: postop pain scores at rest, in sitting position, and uterus cramping over 48h post-CS. Extent of hyperalgesia was evaluated with a von Frey filament (180g of pressure) 48h postop around the area of the scar; it was also recorded preop in women with a repeat CS. Persistent pain at 8 weeks, 6 and 12 months will be evaluated with validated questionnaires.

Results: Demographic data are presented in the Table.
Fourteen women (56%) had a repeat CS; out of which 7 (50%) presented with preop total hyperalgesia extent of 8cm ± 11. Measurable hyperalgesia was present postop in 13 women (52%). In these women, mean 48h total hyperalgesia extent was 17cm ± 8.

Discussion: Our findings demonstrate a high incidence (52%) and a large extent of post-CS hyperalgesia in a cohort of women receiving spinal F (25mcg) and morphine. Whether this is due to the presence of prior hyperalgesia in more than half of these women, or to the use of spinal F at a rather large dose remains to be determined. Based on these findings and the extent of hyperalgesia, we estimate that 39 patients/group will provide a power of 80% at a α level of 0.05 to detect a decrease of 30% in the hyperalgesia extent in a standard group (25mcg) versus low dose group (5mcg). Such a decrease in acute hyperalgesia extent may reduce the occurrence of chronic pain after CS.

References:

Additional File: