Fentanyl as an adjuvant to transversus abdominis plane blocks and its effect on time to first request of analgesia: a meta-analysis

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INTRODUCTION

- The ultrasound guided transversus abdominis plane (TAP) block was first described in 2007 by Hebbard, providing analgesia for the abdominal wall between T7-T11.
- Prolonging the duration of the local anaesthetics (LA) in patients undergoing abdominal surgery is desirable as severe pain can develop on the first postoperative after the effect of the local anaesthetic has worn off.
- A number of LA adjuvants including magnesium sulphate have been evaluated for their ability to prolong the duration of TAP block with varied results.

OUTCOMES

- Primary outcome: effect of fentanyl as an adjuvant to TAP block on time to first analgesia request.
- Secondary outcome: 24 hour morphine consumption and intraoperative fentanyl requirement.

METHODS

- MEDLINE, Google Scholar, EMBASE and the Clinical Trials Registry website(<http://clinicaltrials.gov>), conference abstracts and bibliographic references were searched for RCTs looking at TAP blocks using LA versus LA +/- Fentanyl
- Search terms were: fentanyl, transversus/transverse abdominal/abdominis plane block, ultrasound guided and adjuvant.
- Data were recorded independently by author (NS) with any discrepancies resolved by re inspection of the original articles. The data were then entered into the statistical program Revman 5.3.0 (by N.S.).

ANALYSIS AND RESULTS

- Fentanyl as an adjuvant to TAP prolonged the time to analgesia request by 31.25 minutes.
- 24 hour morphine consumption was reduced by approximately 4mg.
- Sensitivity analysis of fentanyl as an adjuvant TAP block in caesarean sections as the operative procedure showed that fentanyl did not significantly effect any of the study outcomes.
- There was marked heterogeneity amongst all outcomes, possibly due to variety of operations included, laparoscopic cholecystectomy to caesarean section.
- No study reported an increase in side effects such as PONV, pruritis or sedation.

DISCUSSION

- Fentanyl directly acts on peripheral opioid receptors resulting in opioid anti nociception and has long been used in neuraxial blockade.
- Previous studies have shown mixed effects of fentanyl as an adjuvant to peripheral nerve blockade.
- TAP block is limited to somatic pain relief only but has been shown to to decrease intraoperative and postoperative opioid requirements although through systemic or local action is unclear.

CONCLUSIONS

- Fentanyl as an adjuvant to TAP block significantly prolongs time to first analgesia request; reduces 24 hour morphine consumption and intraoperative fentanyl requirement.
- The results of this meta analysis should be interpreted cautiously due to marked heterogeneity and small study.

FIGURE 1. Forest plot: Time to first analgesia request

FIGURE 2. Forest plot: 24hour morphine consumption