Incisional and intraperitoneal local anaesthetics in laparoscopic cholecystectomy and abdominal hysterectomy: a systematic review

**Background**

- In patients undergoing abdominal procedures, the administration of subcutaneous and intraligamental infiltration with local anaesthetic (LA), or the instillation of LA by the intraperitoneal route, has the potential to reduce postoperative pain and lower supplementary analgesia requirements.
- However, evidence from clinical studies for the efficacy of LA administered by these routes has been conflicting.
- In order to examine this question more closely, a systematic review of the effects of incisional and intraperitoneal LA in two common procedures, laparoscopic cholecystectomy (LC) and abdominal hysterectomy (AH), was conducted.
- The aim of this review was to examine the pattern of effect of incisional and intraperitoneal LA on visual analogue scale (VAS) pain scores for the first two postoperative days following these two different surgical procedures, and to review the data from pre-incisional LA in these procedures.

**Methods**

- Systematic reviews were conducted using the methods of the Cochrane Collaboration.
- MEDLINE and EmbASE were searched from 1966–June 2003 (LC) and 1966–Jan 2004 (AH) using pre-defined search criteria, and reference lists of identified studies were also searched for further references.
- Studies eligible for inclusion were randomised trials of intraperitoneal or incisional LA compared with placebo in which all patients, or a definable subgroup, underwent LC or AH.
- The use of a visual analogue scale (VAS) or verbal rating scale (VRS) was required for inclusion. VRS scores were converted to VAS scores (0–100 mm scale).
- Qualitative and quantitative (meta-analysis) analyses were conducted.
- Meta-analysis was conducted on mean differences in postoperative VAS scores, grouped by time postoperatively. Outcomes were reported as weighted mean differences (WMD) with 95% confidence intervals.
- A difference between LA and placebo of 13 points on the VAS scale was reported as being clinically meaningful.

**Results**

**Incisional local anaesthetic**

- Five studies (3 arms) examined pre-incisional LA in LC:
  - of these, 5 arms reported a significant benefit of LA over placebo for pain at rest.
  - quantitative analysis of these studies demonstrated a reduction in VAS score at rest of 13.9 at 3 h, 11.0 at 12 h, 12.1 at 24 h and 3.5 at 48 h (figure 1a).

**Intraperitoneal local anaesthetic**

- Eight studies (9 arms) examined post-incisional LA in AH:
  - of these, three studies showed a significant benefit of LA over placebo for pain at rest.
  - quantitative analysis demonstrated a reduction in VAS for post-incisional LA of 5.0 at 4 h, 9.0 at 8 h, 4.8 at 24 h and 3.9 at 48 h (figure 1c).

**Conclusions**

- Pre-incisional LA has a statistically significant effect following LC up to 24 h, which is of borderline clinical significance. Data are not available on postincisional LA in LC.
- Although statistically significant benefits were observed at 8 h and 24 h for postincisional LA in AH, these benefits were not clinically meaningful. Pre-incisional LA has no significant or clinically meaningful benefit in AH.
- Intraperitoneal LA has a significant and clinically meaningful effect in reducing pain on movement following LC, this benefit may extend to 12 h.
- Data for the benefit of intraperitoneal LA in the early postoperative phase following AH (up to 8 h) are lacking. There is no evidence of a clinically meaningful benefit on pain at rest or on movement from 8–48 h.
- These data suggest that incisional and intraperitoneal LA may have a role in the management of postoperative pain in the first 12 hours following LC, but not following AH. These data reinforce the need to examine the benefits of interventions on a procedure-specific basis.