Efficiency and safety of the rectus sheath block analgesia following midline laparotomy

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Background and goal of study

Postoperative pain is the most common complaint after surgery. Pain after midline laparotomy is derived from multiple origins; the abdominal wall, viscera, and from peritoneal irritation.

A single agent or pain-relieving technique is seldom sufficient for postoperative pain management. Opioid analgesics are especially effective for controlling nociceptive and visceral pain¹. Peripheral abdominal wall blocks are increasingly used after laparotomy. Central nervous blockades are highly effective but have contraindications. Increasing use of anticoagulant drugs may prevent use of them.

The rectus sheath block (RSB) has been investigated in laparotomy², but there is a controversy about its efficiency³.

This study was designed to evaluate the efficiency and safety of RSB after laparotomy.

Patients and methods

56 patients undergoing midline laparotomy were randomized in four groups: control (n=12), single bolus (n=16), repeated boluses (n=12) and continuous infusion (n=17) RSB analgesia groups. Consumption of oxycodone with iv PCA-pump for rescue analgesia were registered for the first 48 postoperative hours. Pain scores and patient satisfaction were assessed by a numerical rating scale (0-10). Plasma concentrations of oxycodone and metabolites were analysed. All adverse events and complications during the hospital stay and 30 days after surgery were recorded.

References

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3. Kim JS, Choi JB, Lee SY, et al. Pain related to robotic cholecystectomy with lower abdominal ports: effect of the bilateral ultrasound-guided split injection technique of rectus sheath block in female patients: A prospective randomised trial. *Medicine (Baltimore)* 2016 doi: 10.1097/MD.0000000000004445.

Results

Oxycodone consumption was less during the first 12 h in the repeated boluses and continuous infusion group (p=0.07) but thereafter similar in the four groups. Plasma oxycodone concentrations were similar in all four groups, the mean analgesic concentration of oxycodone was 20-30 ng/ml (Table 1).

Pain at rest at 24 h was less in the repeated boluses-groups (p=0.006) and patient satisfaction better (p=0.025) than that in the control-group.

No serious or unexpected adverse events were noted during hospital stay. During the first 30 postoperative days, two superficial wound infections (one in the single-dose group, one in the infusion group) and one deep wound infection (in the control group) were noted.

Table. Cumulative oxycodone consumption (mg). Data are 95% confidence interval of means.

	Control n = 12	Single bolus n = 16	Repeated doses n = 12	Continuous infusion n = 17
12 h after surgery	24-49	29-61	22-39	16-26
24 h after surgery	35-86	50-98	37-62	33-54
48 h after surgery	55-131	78-167	58-94	55-96

Conclusions

Multimodal postoperative analgesia with RSB using repeated boluses or continuous infusion via catheters may enhanced analgesia in patients having midline laparotomy.