Association of multilevel thoracic retrolaminar paravertebral blocks for MIDCAB surgery through left anterior small thoracotomy (LAST) with decreased opioid consumption: 2 case reports.

Hirotaka Ito

Shinmatsudo Central General Hospital, Dept of Anaesthesiology, Chiba, Japan

Background and aims

- Recently, **Society for Enhanced Recovery After Cardiac Surgery (ERACS)** has been developed with a mission to “a multimodal, opioid-sparing, pain management plan is recommended postoperatively.”
- Compared to patients undergoing conventional OPCAB through **median sternotomy**, MIDCAB through left anterior small thoracotomy (**LAST**) patients suffer **more pain in the first 3 to 5 postoperative days**, probably as a result of the lateral thoracotomy.
- We hypothesized that patients receiving **multilevel thoracic retrolaminar paravertebral blocks (TRLPVB)** would have decreased peri- and postoperative opioid consumption.

Methods

- Two consecutive patients with normal EF undergoing MIDCAB surgery through LAST without CPB were evaluated.
- Ipsilateral (left) TRLPVB was performed upon general anesthesia induction completion with **20 ml levobupivacaine (0.25%)** for each lamina of the T4 and T5 vertebrae.
- Postoperative pain was controlled with standardized **acetaminophen and/or pentazocine boluses** after surgery.
- Pain was graduated using the numerical rating scale (**NRS**). The NRS score ranges from 0 to 10, with 0 representing no pain and 10 representing the worst pain imaginable.

Case 1: 179cm, 70kg, EF = 61%

- A 68-year-old male had a history of mild MR and mild TR, angina of effort, with two times of percutaneous coronary intervention (PCI).
- A single-injection TRLPVB was performed after anesthesia induction (before operation).

Case 2: 165cm, 81kg, EF = 71%

- A 62-year-old male had a history of effort, with infrarenal saccular abdominal aortic aneurysm (SAAA) treated by endovascular aneurysm repair (EVAR).
- A single-injection TRLPVB was performed after anesthesia induction (before operation).

Results

- Two patients received injection **fentanyl 0.15 mg** for induction.
- Intraoperative remifentanyl was infused continuously at a rate of 4 ml/hr (2mg/20ml) and **no increased remifentanyl infusions** were used between skin incision and closure during surgery.
- In both patients, **peak of the NRS score was 8 on postoperative day (POD) 2**.
- A first required rescue analgesics at 24 hours (h) post-TRLPVB were intravenous (IV) **acetaminophen (1000 mg)** in both patients.
- Additional required analgesics at 30 and 36h post-TRLPVB were IV **pentazocine (15 mg)** in Case1 and at 47h post-TRLPVB was IV **acetaminophen (1000 mg)** in Case2.
- From **POD3** onwards both patients had less pain (NRS < 2) and **required no pain medication**.

TRLPVB

Figure 1.

Figure 1. The TRLPVB were performed **without US guidance** at the left T4 and T5 levels (A, B and D). A 22G needle was used to scan the back in a sagittal plane to identify the depth of the lamina like the way of the para-median approach during epidural block (C and E). In first, A 22G needle was inserted perpendicularly to the skin, 1cm lateral to the spinous process at both T4 (B) and T5 and advanced until lamina was contacted (C). At this time, ten milliliters of 0.25% levobupivacaine were injected. Next, point of the needle was moved to be located just cephalad to the same lamina (D and E) and ten milliliters of 0.25% levobupivacaine were injected. (total 20ml / lamina)

Minimally Invasive Direct Coronary Artery Bypass (MIDCAB)

Figure 2. The 5-6 cm incision was localized above the fifth intercostal space, 3-4 cm lateral to the left sternal border and below the left mammilla. A more lateral 1 cm **camera-port was positioned at the same intercostal space** (A). At the end, one intercostal drain was placed in through this camera-port. With a double-lumen tube, the left lung was deflated before entering the pleural space (E). The left internal mammary artery was harvested under direct vision with the use of special retractors (Arm-GEISTER®: Table post, Upper frame, Crank box assembly, Stabilizer-Medtronic®: Octopus Nuvo MICS stabilizer) (B and C). The anastomosis of the left anterior descending artery was performed on the beating heart as known from off-pump surgery (D).

Conclusion

- In both patients, preoperative multilevel TRLPVB was associated with decreased peri- and postoperative opioid consumption.

Acknowledgement

No one provided financial support for this study