Erector spinae plane block is useful as postoperative analgesia management after thoracoabdominal aortic aneurysm surgery: A case series

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Background

Postoperative analgesia management after thoracoabdominal aortic aneurysm (TAAA) surgery is difficult.

- TAAA surgery results in a large surgical wound
- Analgesic restriction
- Opioid restriction due to opioid-induced paraplegia
- Regional anesthesia restriction due to anticoagulation management in cardiopulmonary bypass

Erector spinae plane block

First described by Forero and colleagues in 2016.

Erector spinae plane block (ESPB) has since been reported to have analgesic effects in a wide area of the ventral primary ramus of the spinal nerve.

Benefits of ESPB:

- Easily recognizable sonographic anatomy
- Immediate vicinity is free of neurovascular structures
- Anatomically lends itself well to insertion of an indwelling catheter for prolonged analgesia
- Has not been reported to produce sympathectomy or adverse impact hemodynamics

Hypothesis

ESPB may be useful for postoperative analgesia after TAAA surgery.

Material and Methods

We received informed consent from the patients and approval from the ethics committee of our hospital for the conference report.

Survey period; Between March and April 2019

We prospectively followed 2 patients who underwent TAAA surgery with pre-induction placement of a continuous ESPB infusion catheter.

Endpoints;

- Numerical Rating Scale (NRS) pain scores until the end of continuous ESPB
- Effect range of cold signs and pinprick
- Meal/drinking start timing
- ICU stay

ESPB technique

- Performed with the patients in the right lateral position.
- Linear array ultrasound probe (GE Healthcare) in a longitudinal orientation approximately 3 cm from midline at the level of the T7 transverse process.
- 20 ml of 0.375% ropivacaine or 1% xylocaine was injected deep to the erector spinae muscle.
- A single hole (B BRAUN) for the continuous ESPB infusion catheter was made in the same plane
- Infusion; 0.2% ropivacaine at 5 ml/h + 3-ml PCA bolus every 30 minutes.
- Catheter maintained for 72 h as postoperative analgesia.

Results

	Case 1	Case 2
Age (y)/Sex	77/male	71/male
Weight (kg)	82.4	58.5
BMI (kg/m ²)	28.4	20.8
Preoperative diagnosis	TAAA (Crawford IV)	TAAA (Crawford IV)
Surgical procedure	TAA vascular replacement	TAA vascular replacement
Extubation timing	POD 1	POD 1
Range of NRS static pain scores		
0-24 hours	0-2	2-4
24-48 hours	0	0
48-72 hours	0	0
Sensory loss to cold signs	T6-L1	T4-L2
Sensory loss to pinprick	T7-L1	T3-L3
Drinking start timing	POD 1	POD 1
Meal start timing	POD 1	POD 1
ICU stay	POD 2	POD 2

TAA; Thoracoabdominal, POD; postoperative day

Discussion

- ESPB provided sufficient postoperative analgesia after TAAA surgery.
- Paraplegia in TAAA surgery reduces the postoperative ADL and increases mortality.
- Therefore, epidural anesthesia in TAAA surgery requiring anticoagulation control under cardiopulmonary bypass is difficult to select due to the risk of central nervous system complications.
- Peripheral nerve block, such as paravertebral block (PVB) or ESPB, may be useful as postoperative analgesia.
- There are reports that PVB has a median sensory blockage area of 4 dermatomes, making it difficult to cover all wound pain due to TAAA.
- In this observational case series, ESPB was useful as postoperative analgesia because it reduced the postoperative NRS and provided a wide range of sensory blockade.
- It may lead to early recovery after surgery.
- Further studies are required.

Limitations

A case series with a small sample size.

Conclusion

ESPB is useful for analgesia management after TAAA surgery.