OPTIMISING PAIN RELIEF IN A PEDIATRIC PATIENT FOR VATS DECORTICATION

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Introduction

The evolution of Video-assisted thoracoscopic surgery (VATS) has created a more favourable framework for enhanced recovery after thoracic surgeries. Despite the reduced invasiveness when compared to the thoracotomic approach, postoperative pain after VATS is still considered moderate-severe, with a prevalence of chronic pain ranging from 22% to 63%, likely due to intercostal nerve and muscle damage from trocar insertion.¹

Besides surgical trauma, a patient with empyema presenting for VATS decortication suffers from pleurisy- pain from inflammation of the pleura.

Aim

A multimodal opioid-sparing approach, combining systemic and loco-regional analgesia to achieve early pain control and reduce risk of respiratory complications is advocated. This is especially important in the paediatric population who is less able to verbalise pain. Yet there is currently no consensus on the best strategy for treating pain for VATS². Infective lesions e.g. Empyema further impact on the use of invasive regional techniques.

Method

We describe the perioperative pain management of a 7yr old, 30 kg child who underwent VATS decortication for left empyema and chest drain insertion, a painful procedure that might benefit from a unilateral regional technique.

After lung isolation with a bronchial blocker, we positioned the child laterally and proceeded with an erector spinae plane (ESP) block as it is more superficial and further from the infected pleural space, compared to the paravertebral block (PVB). Moreover, it was difficult to visualise the endpoint for paravertebral block as the pleura was stuck down from inflammation and a chest drain was in-situ. 16 mls of 0.25% levobupivacaine was deposited beneath the erector spinae muscle above the T4 transverse process under in-plane ultrasound-guidance using a 50 mm 22G echogenic needle. Long lasting analgesia was achieved with minimal opioids being used; a total of 30 mcg fentanyl and 1mg morphine intra-operatively for the 4 hour long surgery. Post-operatively, pain score was well-controlled (0-2) with IV paracetamol 15mg/kg 6hrly and IV morphine (total of 10 mg morphine used in the first 48 hours post-opt), subsequently converted to PO oxycodone 2.5mg 6hrly from POD 3 onwards.

Discussion

For VATS decortication of empyema in our paediatric patient, the ESP block has the following benefits:

- ❖ It is a simpler, safer alternative to thoracic epidural or paravertebral block
 - Its sonographic target is easily visualized and more superficial, away from the infected pleural cavity
- ❖ The site of injection is distant from the neuraxis, pleura, and major vascular structures.
 - LA deposited in the fascial plane underlying the erector spinae muscle permits extensive craniocaudal spread, enabling multi-dermatomal coverage and wound analgesia, even with a single block distant from the surgical site.
- ❖ It provides some visceral analgesia for inflammatory pain from the inflamed visceral pleura
 - likely contributed by the diffusion of local anaesthetic across the costotransverse ligament into the paravertebral space.
 - It also covers the shoulder and back pain, frequently experienced by patients with pleurisy
- ❖ It facilitates multi-modal analgesia; lowers perioperative opioid consumption, enabling
 - fewer medication side effects
 - earlier ambulation
 - return of appetite and discharge home.

Conclusion

Current evidence for the use of ESP block in paediatrics is mainly limited to case series reporting success in laparoscopic and open thoracoabdominal surgeries³. The value of this block seems to be in its more favourable risk-benefit profile, where it could be used in a wider range of clinical settings⁴, including anticoagulated patients, paediatrics and in this case infection. More comparative studies in the form of randomised controlled trials⁵ will be needed to establish its efficacy over placebo, systemic analgesia and/or alternative blocks.

References:

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