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## CLINICAL INFORMATION

### Transient Horner's syndrome after single shot paravertebral block



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#### KEYWORDS

Horner's syndrome;  
Paravertebral block;  
Video assisted  
thoracic surgery

#### Abstract

**Background:** Thoracic paravertebral block can provide analgesia for unilateral chest surgery and is associated with a low complication rate. Horner syndrome also referred to as oculosympathetic paresis, is a classic neurologic constellation of ipsilateral blepharoptosis, pupillary miosis, and facial anhidrosis resulting from disruption of the sympathetic pathway supplying the head, eye, and neck.

**Case report:** We present a patient with an ipsilateral transient Horner syndrome after ultrasound guided single shot of 15 mL 0.25% levobupivacaine for thoracic paravertebral block at T5–6 level.

**Conclusions:** It should be kept in mind that even a successful ultrasound guided single shot thoracic paravertebral block can be complicated with Horner syndrome due to unpredictable distribution of the local anesthetic.

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#### PALAVRAS-CHAVE

Síndrome de Horner;  
Bloqueio  
paravertebral;  
Cirurgia torácica  
videoassistida

#### Síndrome de Horner transitória após bloqueio paravertebral em injeção única

#### Resumo

**Justificativa:** O bloqueio paravertebral torácico pode proporcionar analgesia para cirurgia torácica unilateral e está associado a um baixo índice de complicações. A síndrome de Horner (também denominada paralisia oculossimpática) é uma constelação neurológica clássica de blefaroptose ipsilateral, miose pupilar e anidrose facial devido a distúrbio da via simpática que fornece inervação para a cabeça, olhos e pescoço.

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*Relato de caso:* Apresentamos o caso de um paciente com síndrome de Horner transitória ipsilateral após a administração de injeção única de 15 mL de levobupivacaína a 0,25% para bloqueio paravertebral torácico ao nível de T5-6 guiado por ultrassom.

*Conclusões:* Devemos considerar que mesmo um bloqueio paravertebral torácico bem-sucedido com a administração de injeção única e guiado por ultrassom pode ser complicado com a síndrome de Horner devido à distribuição imprevisível do anestésico local.

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## Introduction

Thoracic paravertebral block (TPVB) provides excellent analgesia for a wide variety of surgical procedures. It results in a more balanced hemodynamic profile when compared to thoracic epidural block. TPVB is a good alternative for both general anesthesia and thoracic epidural block, owing to its safety and less frequent adverse events.<sup>1</sup>

Transient ipsilateral or bilateral Horner Syndrome (HS) can develop if local anesthetic reaches to the ipsilateral stellate ganglion or the preganglionic fibers originating from the first few segments of the thoracic spinal cord, whereas the contralateral paravertebral spread via the prevertebral route.<sup>2</sup>

In this article, we present a case of transient HS, following TPVB performed for providing analgesia after a video assisted thoracic surgery that is executed in the right lateral decubitus position.

## Case report

A 24 year-old, 75 kg, ASA I male patient had necrotizing pneumonia complicated with loculated empyema. He underwent a uniportal video assisted thoracic surgery (VATS) for drainage of empyema and lysis of adhesions. An ultrasound (US) guided paravertebral block was performed for the aim of providing postoperative analgesia. Before the procedure, ECG, NIBP, SpO<sub>2</sub> were employed for routine monitoring and the patient received sedo-analgesia (0.03–0.05 mg.kg<sup>-1</sup> midazolam and 0.5–1 mcg.kg<sup>-1</sup> IV fentanyl). The procedure was performed in sitting position. Linear 5–12 MHz Ultrasound (USG) probe (General Electric, Logic P5, USA) was placed between two transverse processes of T5 and T6 vertebrae in the paramedian plane on ipsilateral side of the planned port entrance. Transverse processes, superior costotransverse ligament and pleura were visualized. Skin and subcutaneous tissue was anesthetized with 2% lidocaine infiltration. An 18 gauge 50 mm needle (Pajunk®, Geisingen, Germany) was introduced and advanced in-plane until superior costotransverse ligament. After ensuring of no bleeding with negative pressure, 15 mL 0.25% levobupivacaine was injected at T5 level. Pleural depression with local anesthetic bolus was observed. Afterwards, the patient was positioned supine for general anesthesia induction with 2–3 mg.kg<sup>-1</sup> propofol and 0.6 mg.kg<sup>-1</sup> rocuronium. A double lumen endotracheal tube was placed with successful single lung ventilation. Anesthesia maintenance was achieved with a gas mixture of sevoflurane 2%, 50% O<sub>2</sub> and 50% air. A left

uniportal VATS for drainage of loculated empyema and lysis of adhesions was performed. Acetaminophen (1 g IV) was administered 30 min before cessation of anesthetics.

A total of 1500 mL IV compound sodium lactate was administered. Blood loss was negligible. At the end of the operation, we noticed right ipsilateral classical signs of Horner syndrome (ptosis, miosis, enophthalmos and anhidrosis) in the operation room after extubation. The patient was fully alert and comfortable and vital signs were within normal limits. Over the next 4 h, the Horner syndrome findings gradually disappeared.

## Discussion

A thoracic paravertebral injection may spread to the contiguous levels above and below, the intercostal space laterally, the epidural space medially, or a combination of these or it may remain localized to injection site. The injection affects ipsilateral somatic and sympathetic nerves, including the posterior primary ramus in multiple contiguous thoracic dermatomes if it spreads in this manner.<sup>3</sup>

Clinical experience, cadaveric, and radiographic studies form the basis for current recommendations. A somatic block over a median of three dermatomes and a sympathetic block over eight dermatomes are produced by a single injection of 15 mL local anesthetic. The spread of injectate in the paravertebral space is less in women compared with men.<sup>4</sup>

Two cases of HS resulting from continuous paravertebral block at T2–3 was reported by Renes et al.<sup>5</sup> One of these patients was further complicated with ipsilateral diaphragm paralysis.

In a study comparing the efficacy of general anesthesia versus single dose T4 paravertebral block in 86 patients undergoing breast surgery, HS occurred in one of the participants in paravertebral block group.<sup>6</sup>

Established literature and case reports state female gender, high volume of local anesthetic, high level of block and continuous infusion as risk factors for occurrence of HS after TPVB. In our case, Horner syndrome occurred despite lower level of block, single dose injection, ultrasound guidance and male gender. Lateral decubitus and mild Trendelenburg positioning of the patient might have facilitated cephalad spread of the anesthetic agent, in our opinion.

## Conclusion

It should be kept in mind that even a successful ultrasound guided single shot thoracic paravertebral block can

be complicated with rarely seen temporary complications such as Horner syndrome due to unpredictable distribution of the local anesthetic.

### Conflicts of interest

The authors declare no conflicts of interest.

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