1. Introduction

Continuous incisional infusion of local anesthetic through an extrapleural catheter is a safe and effective adjunct to control postoperative pain after thoracotomy [1, 2]. A soaker-hose catheter with multiple sideholes (On-Q PainBuster Post-Op Pain Relief System, I-Flow Corporation, Lake Forest, CA) is commonly used for this purpose. Placement of the catheter is performed by the surgeon prior to closure of the thoracotomy. A blunt obturator covered by a tear-away sheath is introduced percutaneously inferior to the thoracotomy and advanced superodorsally in a curvilinear fashion within the extrapleural plane. Proper placement of the obturator is confirmed by both palpation and direct visualization through the thoracotomy. The obturator is then removed and the catheter is fed through the sheath, which tears away. The catheter is then connected to an elastomeric pump with a flow-limiting valve. This method allows controlled infusion of the anesthetic into the extrapleural plane with subsequent diffusion to achieve an intercostal nerve block.

Bupivacaine is a widely used agent for extrapleural infusion as it is generally well tolerated. Local and systemic complications occur in less than one percent of cases (Detterbeck 2005). Here we present a patient who developed a new-onset, reversible Horner syndrome post-thoracotomy associated with the use of local anesthetic infusion via an extrapleural catheter.

2. Case report

A 58-year-old African-American female, weighing 54 kg and measuring 160 cm, was found to have a right upper lobe pulmonary mass on a preoperative chest radiograph for carpal tunnel surgery. Past medical history was significant for active smoking, hypertension, and chronic sinusitis. Her only medication was amlodipine. Review of systems was unremarkable. Pulmonary exam was clear to auscultation bilaterally, gross sensorimotor function was intact globally, and no obvious deformities of the spine or rib cage were evident. Evaluation of the pulmonary mass with PET/CT revealed hypermetabolic activity consistent with a primary bronchogenic malignancy. No mediastinal involvement or additional sites of abnormal uptake were found. The patient was brought to the operating room for elective right upper lobe wedge resection.

The patient was placed under general anesthesia. A right fifth intercostal posterolateral thoracotomy was performed and the fifth rib was shingled. A large mass was found within the right upper lobe and was resected. Intraoperative frozen section confirmed non-small cell adenocarcinoma and a completion lobectomy was performed. Prior to closure of the thoracotomy, an On-Q system containing 450 ml of 0.25% bupivacaine was introduced extrapleurally using a 20-gauge soaker-hose catheter by the technique described above. After proper placement was confirmed, the bupivacaine was allowed to infuse at 3 ml/h. The wound was closed and two chest tubes were placed anteriorly and posteriorly. The surgical procedure did not involve the spine or thoracic nerve roots. The patient tolerated the procedure well and there were no complications.

On postoperative day one the patient complained of heaviness of the right eyelid. She was noted to have new-onset right-sided blepharoptosis and pupillary miosis. She also reported symptoms consistent with ipsilateral facial anhidrosis. Her neurologic exam was otherwise unremark-

**Keywords:** Thoracotomy; Horner syndrome; Nerve block

**Abstract**

Continuous incisional infusion of local anesthetic through an extrapleural catheter to achieve an intercostal nerve block is a safe and effective adjunct to control postoperative pain after thoracotomy. Local and systemic complications are rare. Here we present a case of an acute, reversible, post-thoracotomy Horner syndrome associated with the use of local anesthetic infusion via an intraoperatively placed extrapleural catheter.

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Keith M. Blechman*, Michael Zervos

New York University Langone Medical Center, New Bellevue North 1, 550 First Avenue, New York, NY 10016, USA

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**Negative results - Thoracic non-oncologic**

**Post-thoracotomy Horner syndrome associated with extrapleural infusion of local anesthetic**

Keith M. Blechman*, Michael Zervos

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blepharoptosis, pupillary miosis, and facial anhidrosis, is a classic neurologic constellation of ipsilateral work-up was deemed unnecessary by the consulting catheter were encountered during her admission. Further thorax. No other complications related to the extrapleural operative chest radiographs revealed no masses in the resolved after 72 h of low continuous wall suction. Post-operative day two. Her postoperative course was otherwise complete resolution of the Horner syndrome occurred by postoperative chest catheter was promptly removed and compo- nent of the differential diagnosis in patients manifesting pleural infusion of local anesthetic after thoracotomy. J Thorac Cardiovasc Surg 2005;80:1550–1559.

3. Discussion

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 [3]. Common etiologies include stroke, tumor, trauma, or injury as a complication of surgery. Horner syndrome can also result from infusion of local anesthetic. This is most often described as an infrequent complication of lumbar epidural analgesia in obstetrical procedures [4, 5], although it can also occur with thoracic epidural infusion [6]. Horner syndrome resulting from intercostal nerve blockade is exceedingly rare. There is one case report in the literature of a unilateral Horner syndrome associated with interpleural catheter infusion of 0.5% bupivacaine for atypical chest pain [7]. No formal case reports of Horner syndrome associated with extrapleural catheter use exist, however, brief mention is made of this complication in a single patient from a study of 80 pulmonary and esophageal procedures in which 0.5 mg/kg/h bupivacaine was administered continuously through a percutaneous paravertebral epidural cannula inserted via a 16-gauge Tuohy needle [8]. Interestingly, this is the only observation cited in a review of twelve studies in which a total of 311 patients received extrapleural bupivacaine infusion for post-thoracotomy pain management.

In summary, this case report substantiates the finding that extrapleural infusion of bupivacaine with a soaker-hose catheter may result in a new-onset, reversible Horner syndrome post-thoracotomy and should be considered as part of the differential diagnosis in patients manifesting the characteristic findings.

References


eComment: Post-thoracotomy Horner syndrome associated with extrapleural infusion of bupivacaine

Authors: Ernest A. Ainiteye, National Cardiothoracic Centre, Korle Bu Teaching Hospital, PO Box KB 846, Korle Bu, Accra, Ghana; Frank Edwin, Mark M. Tettey, Kwabena Frimpong-Boateng

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Blechman and Zervos report [1] a rare case of Horner’s syndrome associated with extrapleural bupivacaine infusion for postoperative pain relief after thoracotomy. Horner’s syndrome has been reported [2] infrequently with extrapleural paravertebral nerve blocks but has not been reported in extrapleural intercostal infusions. Karmakar and colleagues [3] however, had one case of Horner’s syndrome among 20 infants who had intraoperatively, direct vision inserted paravertebral catheters for postoperative pain relief.

Transient ipsilateral Horner’s syndrome can also develop from the upward spread of local anaesthetics to the stellate ganglion or to the preganglionic fibres of the thoracic sympathetic chain. Sympathetic block usually occurs with extrapleural and epidural infusions. The position of the patient may be important as Karmarkar [3] has indicated that spread of contrast medium from the thoracic paravertebral region to the cervical region can occur. Complications of extrapleural bupivacaine infusions have been well documented. This is related to the site of the catheter location, the concentra- tion of the infusion as well as the rate of infusion. The infusion rate used by Blechman and Zervos was well within the recommended infusion rate for extrapleural infusions [3].

It is, therefore, important that patients who have extrapleural infusions of local anaesthetic drugs be monitored for Horner’s syndrome which though relatively rare does occur.

References