Anesthesiology
V 75, No 3A, Sep 1991

A115

TITLE: DIFFERENTIAL EFFECTS OF KETAMINE AND THIAMYLAL ON RESPIRATORY MUSCLES OF THE LARYNX IN DOGS

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Laryngeal muscles are highly specialized for phonation, respiration and sphincter activity. Several investigators have shown that the laryngeal closure reflex is depressed under various forms of conventional anesthesia[1]. This study was designed to investigate the comparative effect of adductor and abductor muscles of vocal folds following ketamine and thiamylal in dogs.

Experiments were performed on mongrel dogs, which were anesthetized with approximately 0.2% halothane in oxygen. Electromyographic(EMG) recordings of the activity of the posterior cricoarytenoid, which is the sole abductor of the vocal folds and the cricothyroid, which is one of the adductor of the larynx were made by inserting wire electrodes. EMG activity in these laryngeal muscles was simultaneously recorded following continuous intravenous infusion of ketamine 0.5mg/kg/min or thiamylal 1.0mg/kg/min. Animals breathed spontaneously through the study.

During quiet breathing simultaneous records of EMG activity in the laryngeal muscles showed discharges in the posterior cricoarytenoid occurring with inspiration and alternating with activity in the cricothyroid during expiration. Following ketamine or thiamylal administration animals kept breathing spontaneously. An almost equal suppression of rhythmic activity in both laryngeal muscles was produced following ketamine administration during spontaneous breathing. Contratory to ketamine, thiamylal mainly abolished rhythmic activity in cricothyroid during expiration while activity in the posterior cricoarytenoid was not clearly depressed during inspiration(Fig).

The results of this study demonstrate that expiratory discharge in the adductor muscle of the larynx is selectively suppressed by thiamylal administration, whereas ketamine reduces rhythmic discharge of the both adductor and abductor laryngeal muscles during spontaneous breathing. The anesthesiologists should be remain alert to the possibility of differential suppression of the laryngeal closure-reflex after ketamine and thiamylal.

Reference
1.Laryngoscope 68:109-119,1958

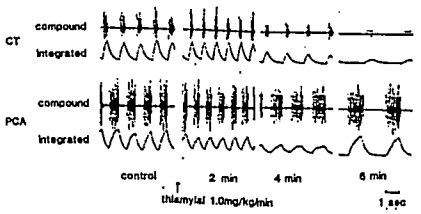

Figure. Representative recordings of compound and integrated EMG activities of the cricothyroid(CT) and the posterior cricoarytenoid(PCA) muscles after thiamylal 1.0mg/kg/min administration.

A116

Title: VITAL CAPACITY AFTER THORACOTOMY: CONTINUOUS EPIDURAL ANALGESIA VS. INTRAVENOUS PATIENT CONTROLLED ANALGESIA

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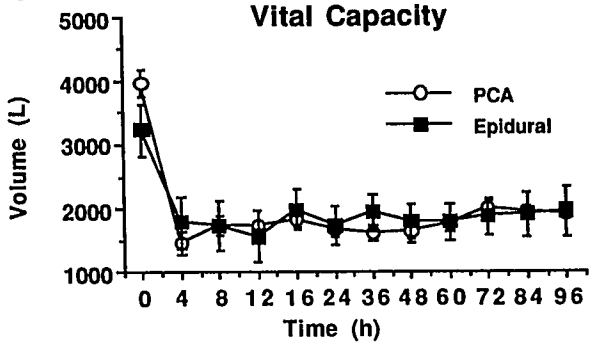
It is well known that pulmonary function is severely diminished following thoracotomy and that effective postoperative analgesia is vital for an uncomplicated recovery. (1) The epidural administration of opiates and/or local anesthetics has been advocated to be superior to parenteral administration of opioids in preserving postoperative lung function. (2,3) In this study the effect of the method of postoperative analgesia (continuous epidural analgesia vs. intravenous patient controlled analgesia (PCA)) on postoperative vital capacity following thoracotomy was investigated.

With institutional approval and informed consent, eighteen patients undergoing thoracotomy for esophageal surgery were randomized into two groups of nine patients each. The evening prior to surgery the patients' vital capacity was measured using a Wright spirometer. A routine balanced anesthesia was used in all patients. Postoperative pain therapy was started immediately at the end of surgery. The epidural group received a bolus of 10 ml 0.125% bupivacaine with epinephrine (1:800,000) and 30 µg sufentanil via an epidural catheter inserted at the T7-T8 interspace, followed by a continuous epidural infusion of 0.125% bupivacaine with epinephrine (1:800,000) and sufentanil 1 µg/ml at a rate of 6-8 ml/h. The PCA group received an IV loading dose of 10 mg piritramide, whereafter an Abott Life Care PCA infusion pump was installed in the continuous plus PCA mode, with a continuous rate of 1 mg/h, a PCA dose of 1 mg, and a lockout interval of 10 minutes. At 4, 8, 12, 16, and 24 hours postoperatively and then every 12 hours during four days, postoperative pain was evaluated using a 100 mm Visual Analog Scale and the vital capacity was measured. Statistical analyses were performed by Mann-Whitney U testing. A P value < 0.05 was considered significant.

There were no significant differences in age, weight, and preoperative vital capacity between the two groups. Postoperative pain relief was similar and satisfactory in both groups. Nevertheless, a drop in vital capacity of 50 to 60% compared to the preoperative value was noted in the first hours after surgery. Furthermore, there was only a slight improvement of vital capacity by 10% during the next four days. These findings are in agreement with previously published observations. (1,2,3) However, these changes in vital capacity did not differ significantly between the two groups in the present study.



Patient controlled analgesia using intravenous piritramide is as effective in controlling post thoracotomy pain as is a continuous epidural infusion of bupivacaine with sufentanil. Neither technique is superior in regard to preserving postoperative vital capacity.

References: 1) Anesth Analg 60: 46-52, 1981
2) Anesthesiology 61: 569-575,1984
3) Regional Anaesthesie 7: 115-124, 1984