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(Accepted for publication March 15, 1988.)

Anesthesiology
69:144, 1988

CPAP or CPP?

To the Editor:—Slinger *et al.*[1] have applied continuous positive airway pressure (CPAP) to the non-dependent lung during one-lung ventilation for thoracic surgery, and found an improvement in arterial oxygenation. Their method of application of CPAP was very unique and effective. I believe that the meaning of CPAP used by authors in their article is continuous positive pressure applied to the non-dependent lung in order to maintain a static inflation during thoracic surgery. Since the definition of CPAP, which is a well-established entity, is continuous positive pressure applied to the patient who is breathing spontaneously,[2] the authors' choice of word CPAP may be confusing and, perhaps, incorrect. Would continuous positive pressure (CPP) or prolonged positive airway pressure be the more appropriate term? There is a distinct difference in the airway pressure curve between CPAP and CPP (fig. 1). Although there is far from universal agreement on terminology used in respiratory care, it must have sound technical and physiological basis, and be clinically useful without confusion.

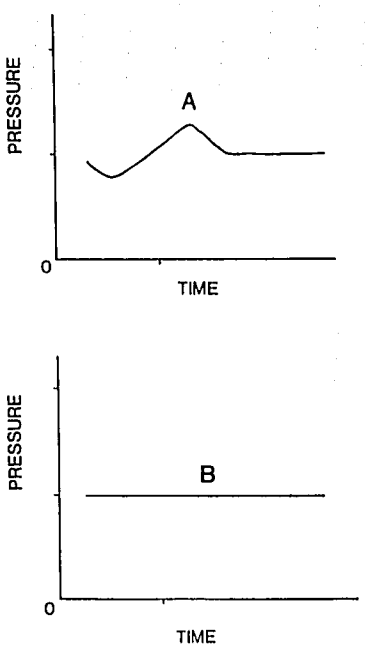

FIG. 1. Airway pressure curves. *A.* CPAP. *B.* CPP.

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(Accepted for publication March 15, 1988.)

Anesthesiology
69:144–145, 1988

In Reply:—Dr. Lee is correct that using the term CPAP to describe the current well-established practice of improving arterial oxygenation by positive pressure insufflation of oxygen to the non-ventilated lung during thoracic surgery may lead to some confusion, because CPAP was initially described for spontaneously breathing patients.

In a clinical study in 1980, Capan *et al.*[1] referred to "oxygen insufflation into the upper lung at 10 cm H_2O" during one-lung anesthesia and avoided using an acronym. In 1981, Alfery *et al.*[2] referred to this technique as "PEEP to the non-ventilated lung." In 1982, Benumof[3] stated "a better term for this ventilatory pattern arrangement would be non-ventilated lung contin-

uous positive airway pressure (CPAP)." Unfortu nately, this dichotomy of terms, non-ventilated lung PEEP[4,5] and non-ventilated lung CPAP,*[6] persists in both current texts and journals.

There is nothing in Gregory's[7] original description of the term CPAP that specifically precludes its use in apneic patients. In fact, many commonly used one-lung CPAP circuits are essentially identical to the circuit described by Gregory. In practice, the airway pressure in the one-lung CPAP circuit fluctuates due to surgical and mediastinal compression of the non-ventilated lung. Thus a pressure-time plot for the system would more closely resemble Dr. Lee's CPAP diagram than his CPP diagram.

We prefer using the term non-ventilated CPAP to non-ventilated lung PEEP because there is no defined expiratory phase, and it causes less confusion in terminology when combined with dependent-lung PEEP.

There are three obvious solutions to this problem: 1) devise a new acronym such as CPP, 2) use the term PEEP, and 3) continue with the term CPAP. None of these is a perfect solution. However, we feel that to change terminology at this late date would only add to the confusion, and we therefore prefer to retain the term CPAP.

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(Accepted for publication March 15, 1988.)

Anesthesiology
69:145–147, 1988

Arrhythmogenic Threshold of Epinephrine during Sevoflurane, Enflurane, and Isoflurane Anesthesia in Dogs

To the Editor:—We determined the threshold for epinephrine (EPI)-induced ventricular arrhythmias in dogs anesthetized with isoflurane, enflurane, sevoflurane, or thiopental plus sevoflurane.

Anesthesia was induced and maintained in nine unpremedicated dogs with 1.3 MAC isoflurane, enflurane, sevoflurane, or thiopental (20 mg/kg), plus sevoflurane. End-tidal anesthetic concentration and P_{CO_2} were monitored continuously. Following trachea intubation without muscle relaxants, the dogs were ventilated to maintain normocapnia. A femoral vein was cannulated for infusion of EPI and a solution of 3% dextrose in 0.5% NaCl. A femoral artery catheter was inserted for intra-arterial pressure monitoring and arterial blood sampling. Nasal temperature was maintained at 37.5–38.5° C. Lead II of the ECG was monitored continuously. Arterial *p*H, P_{O_2}, P_{CO_2}, serum Na, and K were maintained in the range of 7.35–7.45, 90–150 mmHg, 35–45 mmHg, 135–150 mEq/l, and 3.5–4.5 mEq/l, respectively.

Arrhythmogenic dose (AD) of EPI was established by logarithmically spaced infusions of EPI lasting 3 min with at least 10 min between infusion.[1] In this procedure, the infusion was started at the minimum dose of 2.2 $\mu g \cdot kg^{-1} \cdot min^{-1}$, and the dose was increased by $e^{0.4}$ ($e = 2.72$) (3.3, 5.0, 7.4, and 11.1 $\mu g \cdot kg^{-1} \cdot min^{-1}$) until the arrhythmias occurred. If there were the arrhythmias at one of these doses, a smaller dose, which was given by that dose divided by $e^{0.2}$, was tested. When there were the arrhythmias at 3.3 $\mu g \cdot kg^{-1} \cdot min^{-1}$, a