

Correspondence

More on "BURP"

To the Editor:
The backward, upward and rightward directed pressures on the thyroid cartilage described by Dr. Knill did make seemingly impossible intubations possible and as Dr. Knill suggests these steps are necessary in practically all cases of difficult intubation. However, no adequate explanation was given; why and—indeed—why always to the right, backward and upward. Displacement of the larynx to the left and anteriorly during laryngoscopy— as suggested in my previous remarks— does explain the rationale of these corrective steps. In the cases described by Dr. Knill, the already anteriorly lying larynx was further displaced by the laryngoscope and correcting pressures had to be correspondingly greater. Taking this concept to its natural conclusion: displacement of the larynx to the left and anteriorly is inherent in the process of laryngoscopy. Only the degree of laryngeal displacement will differ from case to case. Most, and especially the difficult, intubations can be facilitated by accepting laryngoscopy as a bimanual procedure: "the right hand correcting what the left hand is overdoing."

If this concept becomes widely known and accepted— laryngoscopy and intubation will become a series of well planned logical moves. Since every step can be explained— the teaching of laryngoscopy could be more uniform, and less prone to individual— often conflicting— ideas.

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To Caesar what is Caesar's

To the Editor:
Dr. Richard L. Knill in his recent excellent Review Article "Practical CO₂ monitoring in anaesthesia"¹ used the following quotation:

"Over the oxygen supplies of the body, carbon dioxide spreads its protective wings."

The quotation was attributed to "Samson Wright, circa 1955."

In fact, this quotation ante-dates Samson Wright. It can be found in the title page of Yandell Henderson's book "Adventures in Respiration," published in 1938,² who attributed it to "Miescher, 1885." On page 20, in the Chapter on "Shock and Acapnia," Henderson mentions "The brilliant Swiss physiologist, Miescher of Basel, had assigned first place to carbon dioxide," in the days when the nervous control of breathing predominated. The full reference to Miescher is given on page 295, in the Bibliography, as follows:


Henderson gives his reasons for choosing Miescher's dictum. In page 1 he states "Acapnia is a deficiency of carbon dioxide that leads in turn to a deficiency of oxygen also." Acapnia was, of course, Henderson's "idée fixe," and on page 10 he states "oxygen is an essential food, but not a stimulant. Carbon dioxide, on the contrary, is a tonic and a stimulant" ...

The Italian physiologist A. Mosso had introduced the term "acapnia" as descriptive of a deficiency of carbon dioxide which to him was the cause of mountain sickness. He also described oxygen apnea. On the other hand J.S. Haldane had defined the role of carbon dioxide in the control of breathing. Therefore the scenario was set for Henderson to promote the use of mixtures of oxygen and 5% carbon dioxide as the proper treatment for asphyxia, postoperative; "depression," atelectasis, "hypotonia" of spinal anaesthesia, resuscitation of the new-born, indeed for a whole set of physiological disturbances (2 Passim). In the 1930s and 1940s practically all operating rooms and many delivery rooms were equipped with cylinders containing a mixture of these two gases, in the usual proportion, to treat every conceivable type of problem arising during anaesthesia or in the postoperative period. "Carbogen," as the mixture was called, became a panacea until put to rest like nikethamide and other "stimulants."

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REFERENCES
¹ Knill, RL. Practical CO₂ monitoring in anaesthesia. Can J Anaesth 1993; 40: R40-R44.
I would like to thank Dr. Parsloe for correcting my error. My source attributed this quotation to the British physiologist Samuel Wright who was known to use it frequently in his teaching and as the title of an essay project he assigned to medical students. While Dr. Wright may have popularized this quotation, it is clear that Miescher was the original author.

As Dr. Parsloe’s references indicate, the concept that CO₂ protects the oxygen supply arose from consideration of its physiological role in helping to regulate several fundamental processes required for oxygenation— including alveolar ventilation, cardiac output, regional circulation, and the oxygen saturation and desaturation of haemoglobin. It seemed to me that this concept is at least equally apt when applied to the monitoring role that CO₂ can play in indicating disturbances of oxygenation during anaesthesia. This capability of CO₂ can be readily appreciated by considering the series of metabolic, circulatory, ventilatory and equipment processes involved in both oxygen and CO₂ transport in anaesthetized patients, together with the manner in which CO₂ is commonly monitored (Figure).

Carbon dioxide is typically monitored by capnography at the airway opening—this being a distal or downstream site in the CO₂ transport chain. (In a somewhat analogous way, oxygen is monitored by oximetry at the level of the microvasculature—a relatively distal point in its conveyance chain.) Since the continuous delivery of CO₂ to the airway is completely dependent upon the moment to moment function of each component of the transport system upstream, the nature and size of the CO₂ signal at the airway opening responds rapidly to any disturbance of ventilation, circulation and/or metabolism that alters the transfer of CO₂ upstream. In addition, the airway CO₂ signal detects any reverse of CO₂ flow caused by rebreathing malfunctions of anaesthetic equipment. Since the delivery of oxygen to the tissues utilizes the same transport system (in reverse), the disturbances that alter CO₂ transfer or flow and the resulting airway CO₂ signal can also act to impair oxygenation. In fact, these disturbances constitute the most important causes of tissue hypoxia during anaesthesia. By alerting the clinician about these problems, the airway CO₂ signal is ultimately protecting the oxygen supply.

Thus, in the context of anaesthesia, carbon dioxide can act to safeguard oxygenation in two related but different ways: (1) by helping to regulate the physiologic processes required for delivery of oxygen to the tissues (as it does elsewhere) and (2) by providing a signal which acts as a sensitive early warning indicator of disturbances of these oxygenating processes. For anaesthetists, the quotation of Miescher is doubly pertinent!

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REFERENCES
2 Campbell, EJM. Personal communication.

Safety hazard – Sabex drug labels

To the Editor:

We would like to bring to your attention a safety hazard of which we have just become aware. Our institution recently changed suppliers of morphine and atropine to Sabex. They distribute both drugs in one mg glass vials. Unfortunately, Sabex markets both products with almost identical labels. The Figure illustrates some of the similarity. The label colours of both drugs have similar shades.