or NOS activity, or both, were measured after NOS inhibitor administration. cGMP concentration and NOS activity were not (and could not be) measured during tail pinch, but were measured in the cerebellum of unstimulated animals that had received the same dose of NOS inhibitors as those that had tail pinch. Therefore, although cerebellar cGMP concentration and NOS activity should reflect those in the spinal cord (proposed nociceptive pathway in tail pinch, see discussion of Ichinose et al.), no data are available regarding NOS activity or cGMP concentrations during MAC measurements (tail pinch).

Fumito Ichinose, M.D.
Department of Anesthesia and Critical Care
Massachusetts General Hospital
Boston, Massachusetts 02114
ichinose@etherdome.mgh.harvard.edu

References

1. Ichinose F, Mi W, Miyazaki M, Onouchi T, Goto T, Morita S: Lack of correlation between the reduction of sevoflurane MAC and the cerebellar cyclic GMP concentrations in mice treated with 7-nitroindazole. Anesthesiology 1998; 89:143-8


(Accepted for publication December 4, 1998)

Intermittent CPAP during General Anesthesia

To the Editor.—The interesting article by Bratzke et al. uses an unusual measure of ventilatory efficiency: partial pressure of arterial carbon dioxide (PaCO₂)/minute ventilation. This measure is adequate only during very restricted circumstances. As the authors point out, when comparing two modes of ventilation in rapid succession, an increase in the ratio equates with more efficient ventilation. However, the comparison assumes that carbon dioxide output (VCO₂) and PaCO₂ are “clamped.” If cellular carbon dioxide production were to increase, say by 10%, unchanged ventilation would cause PaCO₂ to increase by 10%. The ratio would then also increase by 10%, but this would not signify greater efficiency. In order not to be misleading, this index can only apply to changes in minute ventilation at constant PaCO₂.

For all-around applicability, an index of ventilatory efficiency must always compare expired and blood gas partial pressure of carbon dioxide (P(t)CO₂), the basis of the dead space concept. The nearest index to the one the authors have used here, i.e., one that increases with increasing efficiency, would be (1 - Vd / Vt), which is obtained from mixed expired P(t)CO₂ divided by PaCO₂. It is the same thing as alveolar ventilation divided by total ventilation.

A second point about the article is that the assumption that anatomic dead space was constant may not be correct. Increases in end-inspiratory pause of a fraction of a second can reduce anatomic dead space significantly (L. Nordström, personal communication, November, 1998), and, therefore, the long continuous positive airway pressure (CPAP) periods used by Bratzke et al. may markedly reduce this dead space, contributing considerably to the increase in alveolar ventilation noted.

Roger Fletcher, M.D., F.R.C.A.
Consultant Anesthetist
Directorate of Anesthesia
Manchester Royal Infirmary
Manchester M13 9ES, United Kingdom

Reference


(Accepted for publication December 17, 1998)