Does Almitrine Restore Halothane-induced Depression of Hypoxic Respiratory Drive?

To the Editor—Clergue et al.\(^1\) recently described an 11.5% increase in minute expired ventilation after administration of almitrine to normoxic patients anesthetized with halothane (1.5%). Hyperoxia eliminated this stimulation. Halothane depresses hypoxic sensitivity, and Clergue et al.\(^1\) concluded that almitrine reverses this effect. Their conclusion is based on an extrapolation of their measurements because they did not study hypoxia. They did not report alveolar or arterial \(P_{CO_2}\), which greatly affect ventilation and could be involved in the almitrine−halothane interaction. The general depressant effect of halothane has multiple sites of action\(^2,3\) besides the carotid bodies, so a complete reversal of hypoxic depression by almitrine would be surprising. Although safety and ethical\(^4\) considerations limit hypoxic experiments in human beings, it is risky to extrapolate data taken in normoxia and hyperoxia into hypoxia. Although their data and that of others\(^5\) supports a peripheral site of action of almitrine, until almitrine−halothane interaction has been studied during hypoxia, it remains to be shown that halothane-induced depression of hypoxic drive is restored by almitrine.

REFERENCES

2. Berkenbosch A, de Goede J, Olievier CN, Quaerj PH: Sites of action of halothane on respiratory pattern and ventilatory response to \(CO_2\) in cats. Anesthesiology 57:389−398, 1982

In reply—Dr. Ward is questioning the validity of the \(O_2\) test of Dejours\(^1\) as a measure of the hypoxic drive to breathing. In normal resting conditions, when \(O_2\) is administered suddenly to a subject breathing room air, the rapid and transient 10−15% decrease in minute ventilation (\(V_{E}\)) represents the removal of "any residual 'hypoxic' activity of peripheral chemoreceptors."\(^2\) When this \(O_2\) test is performed in subjects breathing a hypoxic mixture, the \(O_2\)-related fall of \(V_{E}\) is much greater.\(^3\) The threshold for this \(O_2\)-related stimulation is around