Correspondence

The Anesthesia History Association

To the Editor:

Anaesthetists with an interest in the history of our specialty are invited to join the Anesthesia History Association. The inaugural meeting of the association will be held during the Annual Meeting of the American Society of Anesthesiologists on October 9th, 1983, from 1800 to 2200 hours in the Atlanta Hilton Hotel.

The goals of the association are to foster communication and fellowship among all with an interest in our heritage, as well as encouraging historical research. A quarterly newsletter already has over two hundred subscribers.

Active membership is offered to residents of Canada, Mexico and the United States of America. For further information prospective members are encouraged to contact:

Dr. Selma H. Calmes,
Co-Chairman,
The Anesthesia History Association,
5112 Wilderness Lane,
Culver City, CA 90230 U.S.A.

Thank you for the opportunity to introduce your readers to The Anesthesia History Association.

Rod K. Calverley MD
Dept. of Anesthesiology,
University Hospital,
San Diego, California

J.R. Maltby MB BCHIR FFARCS
Dept. of Anaesthesia,
Foothills Hospital,
University of Calgary,
Calgary, Alberta

The opiate and anti-opiate system: Evidence for involvement in withdrawal responses

To the Editor:

The paper by Manson *et al.*¹ is of considerable interest. These authors have suggested that the opioid effect of N₂O is mediated indirectly via the release of endogenous opioids. This ignores the possibility that N₂O may act directly at opioid receptors, an idea that cannot be excluded.

There is now considerable evidence that N₂O does in fact interact directly at the mu opioid receptor.² This suggestion is further strengthened by findings in radioactive binding studies. These studies have demonstrated that both tritiated dihydromorphine³ and naloxone⁴ can be displaced by N₂O *in vitro*. Since C.S.F. levels of beta-endorphin are not raised during N₂O administration,⁵ a direct action of the gas is even more probable.

A dual system has been proposed to explain the bi-modal effect of naloxone in certain circumstances.^{6,7} This hypothesis postulates the existence of an opiate and anti-opiate system, which are in dynamic equilibrium. It is possible that the bell-shaped dose response curve found by Manson *et al.*¹ could be explained in terms of a differential sensitivity of these two systems to naloxone in withdrawal. A similar bell-shaped dose response curve has been reported, where different concentrations of naloxone were used to precipitate withdrawal in rats.⁸ In this case plasma levels of corticosterone were used as an index of the severity of withdrawal in opiate naive rats, after a single dose of morphine.⁸ These withdrawal phenomena provide evidence that the dual system we have

postulated⁶ may conceivably be involved in withdrawal responses.

Dr. M.A. Gillman
Dr. F.J. Lichtigfeld
South African Brain Research Institute
Johannesburg

REFERENCES

- 1 Manson HJ, Dyke G, Melling J, Gough M. The effect of naloxone and morphine on convulsions in mice following withdrawal from nitrous oxide. *Can Anaesth Soc J* 1983; 30: 28–31.
- 2 Gillman MA. Nitrous oxide at analgesic concentrations – An opiate agonist: Further evidence. *Anesth Analg* 1982; 61: 394–5.
- 3 Ahmed MS, Byrne WL. Opiate receptor binding studies: Influence of a reversible sulfhydryl agent. In: Way EL, ed. *Endogenous and exogenous opiate agonists and antagonists*. New York: Pergamon. 1980: 51–4.
- 4 Daras C, Cantrill RC, Gillman MA. (³H) – Naloxone Displacement: Evidence for nitrous oxide as opioid receptor agonist. *Europ J Pharmacol* (in press).
- 5 Way WL, Hosobuchi Y, Eger EL, Johnson BH. Anesthesia does not increase cerebrospinal fluid opiate peptides in Humans. *Anesth Analg* 1982; 61: 223.
- 6 Gillman MA, Kimmel I, Lichtigfeld FJ. The dual-system hypothesis of pain perception. *Neurological Res* 1981; 3: 317–27.
- 7 Gillman MA, Lichtigfeld FJ. The effect of nitrous oxide and naloxone on orgasm in human females – a preliminary report. *J Sex Research* (in press).
- 8 Eisenberg RM. Further studies on the acute dependence produced by morphine in opiate naive rats. *Life Sciences* 1982; 31: 1531–40.

REPLY

The explanation put forward by Drs Gillman and Lichtigfeld for the effects we observed seems a reasonable alternative to our tentative hypothesis; there remains a need for further experimental work before the underlying mechanisms can be clearly delineated.

The whole area of interaction between anaesthetic agents and endogenous opiate systems is of considerable importance, both clinically and from a basic pharmacological point of view.

Demonstration of the mode of interaction between an inert gas and a control system within the central nervous system would be of great importance to our understanding of anaesthetic mechanisms. Perhaps more direct biochemical analysis will, in time, shed light on the problem.

H.J. Manson FRCP(C)
G. Dyke FRCP(C)
Discipline of Anesthesia
Memorial University of Newfoundland
St. John's

Anaesthetic considerations in the Prader-Willi syndrome

To the Editor:

We read with interest the article by Yamashita *et al.*¹ concerning the anaesthetic management of children with the Prader-Willi syndrome.

We would like to add our experience with three anaesthetics involving two children with the Prader-Willi syndrome.

The first was a six-year-old male child who underwent an uneventful nitrous oxide-oxygen-halothane anaesthetic, following an oral intubation using intravenous succinylcholine, for repair of bilateral undescended testes.

The second child was a three-year-old male scheduled for bilateral orchiopexy. Following an inhalation induction with nitrous oxide-oxygen-halothane, he was reportedly a difficult intubation, with the use of intravenous succinylcholine. He was then maintained on nitrous oxide-oxygen-halothane and curare for relaxation. His initial rectal temperature was 98.6° F but increased to 101.8° F after 45 minutes. An arterial blood gas revealed respiratory acidosis. The patient was actively cooled and the case was immediately terminated. No dantrolene sodium was given. The neuromuscular blockade was reversed using atropine and neostigmine, without difficulty. The postoperative temperature remained below 100° F. The CPK rose to 240 (normal 8–132) eight hours following anaesthesia.