

words in the Fishman paper referred to. "In contrast, ten subjects with normal pulmonary circulations, who responded to acute hypoxia with an average reduction of arterial oxygen saturation of 17% manifested an average increase in cardiac output of 5% . . ."

Indeed, the main "message" of this paper is to the effect that, while the response to exercise is manifested as maximum cardiac output increase with minimum increase in pulmonary arterial pressure, the response to artificial hypoxia is that of minimal increase in cardiac output accompanied by maximum increase in pulmonary arterial pressure. Although the figure of 19% increase in cardiac output in response to hypoxia emerges earlier in the Fishman paper, it is clear that Fishman's final conclusions have been misunderstood by Dr. Wise and his colleagues. In any event, whether the figure of 19% or 5% is "utilized," it must be stressed that Fishman's cardiac output measurements were made against recorded degrees of hypoxaemia produced by the inhalation of mixtures containing 12-14% oxygen. Dr. Wise and colleagues do not disclose their figures, but since only five out of twelve patients exhibited "severe" hypoxaemia, and cardiac output measurements were made in only six (consistent changes in five) patients, the number of hypoxaemia patients who had cardiac output measurements lies between nil and five. Repeated measurements in two or three patients would be of little significance, since it is clear from Fishman's paper that the individual cardiac output response to the hypoxaemic challenge is variable, and in any individual may be small or absent. Moreover, if hypoxaemia results from airway obstruction mechanical impedance of venous return will clearly predominate over any reflex cardiac response. The fully competent heart cannot eject blood which it is not receiving.

In conclusion, Sir, serious doubt has been thrown upon the safety of methohexitone in relation to its cardiovascular effects. On the factual evidence provided, I do not think this doubt is justified.—I am, etc.,

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SIR,—The leading article on intermittent intravenous methohexitone (31 May, p. 525) states that the finding of earlier recovery after methohexitone was "based on subjective impressions by patients, and subsequent scientific assessment has shown that there was no significant difference between [it and thiopentone] as measured by performance tests during the recovery period."

Many workers have reported quicker recovery after methohexitone without using subjective impressions. Green *et al.*,¹ for instance, used clinical assessment and performance-testing on a motor-car-driving simulator. They found a relatively large deterioration in performance during the first two driving periods, mostly after thiopentone, but the difference was not significant. The individual differences in drug effect were significantly greater after thiopentone ($P < 0.01$) during the first driving period. They also found that clinical assessment was a reliable guide to recovery, and that 78% of those who received methohexitone had recovered after 35 minutes, but only 34% of those who received thiopentone ($P < 0.02$).

Similar results were published by other workers,² including where the recovery was assessed by an observer who did not know whether the patient had received methohexitone or thiopentone, and where earlier recoveries were significantly more frequent after methohexitone.—I am, etc.,

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REFERENCES

- Green, R., Long, H. A., Elliott, C. J. R., and Howells, T. H., *Anaesthesia*, 1963, 18, 189.
- Barry, C. T., Lawson, R., and Davidson, D. G. D., *Anaesthesia*, 1967, 22, 228.

SIR,—Dr. C. C. Wise and others have made an important contribution to knowledge in their paper on the physiological consequences of intermittent methohexitone for conservative dentistry (31 May, p. 540). This paper supports the clinical judgement of those who have declined to administer such anaesthetics on the grounds that the integrity of the airway was thereby threatened rather than secured. Furthermore it supports the clinical view that "the outstanding technical problem of dental anaesthesia today is difficulty with the airway."¹

The possibility of a faint coinciding with induction has rightly been stressed by Dr. J. G. Bourne (7 June, p. 630), but it is far from proved that this is the most important cause of dental anaesthetic mortality. In most of the cases cited by Dr. Bourne² hypoxia was an obvious factor, and could be excluded in none of them. Dr. Bourne does not mention difficulties with the airway as an important cause of dental anaesthetic mortality, yet it would indeed be extraordinary if dental anaesthesia could exhibit a freedom from such difficulties (sometimes lethal in outcome) not enjoyed by the rest of anaesthetic practice. Because of such difficulties the problems arising from intermittent methohexitone administration are unlikely to be prevented in practice by the time limitation now suggested by Dr. Bourne—10 minutes for extractions and 20 minutes for conservation—even if this suggestion were to be generally accepted. However, in so far as there is a real and justifiable need for general anaesthesia for conservative dentistry, it can safely be satisfied without such difficulties or drastic time limitation by intratracheal anaesthesia with intravenous induction and inhalational maintenance.³—I am, etc.,

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REFERENCES

- Danziger, A. M., *British Dental Journal*, 1964, 116, 23.
- Bourne, J. G., *Lancet*, 1966, 1, 879.
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SIR,—The paper on methohexitone in dentistry by Dr. C. C. Wise and others (31 May, p. 540) draws conclusions at variance with my own experience.

The series seems to have been carried out on a mere 30 patients under conditions completely different from those found in the dental surgery equipped for dentistry under intravenous methohexitone. In the last two years two colleagues and myself have carried out approximately 10,000 cases, the majority of which lasted 20 minutes or less and the maximum dosages over this time were under 200 mg. The reference to my book¹ has

given rise to the comment that my figures, which were authenticated by Eli Lilly and Co., "are difficult to believe, because they imply that . . . the number of anaesthetics given for conservation per year was the same as the number administered for dental extraction, which is unlikely." This only goes to show how little involved in general dental practice the authors were, as the ratio of extraction cases to conservation cases in my experience is at least 1:10. It is obvious from dosages used by visiting consultant anaesthetists at various practices that the dosages given by dentists are far less than those used by our medical colleagues, and for this reason the dosages handled by distributors indicate a higher number of cases than calculated by the authors. Perhaps they would also like to know that for reasons of economy methohexitone has been imported privately. There seemed to be no control patients used in this series, and I understood from Dr. Wise that the 30 patients in the series required approximately 45 minutes to prepare, prior to induction.

With regard to the dye technique for checking inhalation, it is not mentioned whether the dye was placed in the mouth within an inch (2.5 cm.) or so of the aspirator tip or injected behind the mouth-pack. It was difficult to understand how some of the anaesthetized patients salivated excessively, or made it difficult to carry out good dentistry, as marked salivation and movement are usually signs of too shallow anaesthesia, which might also account for some of the alterations in systolic pressure.

There are other results which scientifically are open to question, and it would seem a great pity if the public are to be deprived of all forms of intravenous medication for dentistry because a paper such as this can be referred to freely by the lay press.—I am, etc.,

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REFERENCE

- Kurland, P., *Intravenous Techniques in Dentistry*, 1967. London, Kimpton.

SIR,—Most people are following with interest the arguments for and against methohexitone as a sole agent for conservative dentistry or an intravenous induction agent for extractions under nitrous oxide/oxygen (31 May, pp. 525 and 540).

The dangers of the upright position have oft been repeated, but I am surprised at the lack of comment on the cardiovascular collapse that may occur in the frightened patient. Acute anxiety is a most potent stimulus to the autonomic nervous system resulting in a marked preponderance of vagal or sympathetic tone. Small wonder that occasionally the added psychic and cutaneous stimulus from intravenous injection produces cardiovascular collapse from intense bradycardia and hypotension on the one hand, or multiple extrasystoles and ventricular fibrillation on the other.

I think most people would agree that in these patients a mild psychomotor sedative such as diazepam given half an hour before surgery along with gentle reassurance are of marked benefit in both facilitating induction and preventing untoward reactions. Kind words have no side-effects.—I am, etc.,

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