CORRESPONDENCE

set against the considerable reduction in PONV that has been demonstrated in those patients given ondansetron [5]. We agree that expensive antiemetic agents should be reserved for those most at risk and our study provided some evidence for targeting those with previous PONV after anaesthesia.

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Calcium channel inhibitors and perioperative myocardial ischaemia in cardiac surgery

Sir,—We read with great interest the paper by Ho, Parisi and Shragge [1] reporting a case of failure to wean from cardiopulmonary bypass after myocardial revascularization, treated successfully with intra-aortic injection of verapamil. The authors excluded hypoxaemia, anaemia and coronary insufficiency caused by inadequate revascularization. They came to the conclusion that the most convincing evidence suggesting that coronary spasm was the main cause of the profound ventricular failure was the rapid improvement in coronary flow during reperfusion, is known to play a major role in endothelial damage, and that potassium concentration in cardioplegic solution, in addition to ischaemia and dependency, should be considered. Low reflow phenomenon, or impairment of post-ischaemic coronary flow, is known to be at least endothelium-dependent [3]. Experimental data showed that potassium concentration in cardiopulogic solution, in addition to ischaemia and reperfusion, is known to play a major role in endothelial damage, leading to a decrease in coronary flow [3,4]. It is not known if some patients or animals are more sensitive to one or other of these factors.

Whatever the case, it has been shown clearly that low coronary reflow can be treated pharmacologically leading to enhanced post-ischaemic mechanical function. Furthermore, we found a positive correlation between enhancement of coronary flow during reperfusion and improved mechanical function [4]. Thus experimental data support strongly the clinical observation reported by Ho, Parisi and Shragge and us [1,2]. Nevertheless, we think that if a calcium channel inhibitor is used as the last resort to treat ventricular dysfunction and ischaemia after cardiac surgery in order to wean the patient from bypass, the drug preferred would be a less negative inotropic and more coronary selective drug [2].

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Morphine and droperidol combined in patient-controlled analgesia: reduction of nausea and vomiting

Sir,—Sharma and Davies [1] showed that the addition of droperidol to morphine given via a patient-controlled analgesia system reduced postoperative nausea and vomiting (PONV) in patients undergoing hysterectomy. We are surprised that despite concern about sedative and extrapyramidal side effects, sedation was not assessed more formally. In a similar study [2], we found that the addition of droperidol caused significantly greater sedation at 24 h. We used verbal rating scores by masked observers. None of our patients experienced extrapyramidal side effects, although they received a comparable mean dose of droperidol in the first 24 h (including a peroperative prophylactic dose of 2.5 mg).

In our study, patients received morphine as the sole analgesic agent, both during and after operation, and patients who experienced PONV within the first 1 h of surgery were not excluded as we felt this would not give the full picture of this common and distressing phenomenon. We demonstrated a reduction in the need for rescue antiemetic treatment from 59.3% to 31.0% over the 24-h period after surgery.

In their discussion, Sharma and Davies stated that "the mixture of morphine and droperidol appeared to be stable, as both drugs remained clinically effective and no precipitate was visible after 24 h". We wish to point out that the stability of morphine and droperidol. In a similar study [1,2], we found that the addition of droperidol caused significantly greater sedation at 24 h. We used verbal rating scores by masked observers. None of our patients experienced extrapyramidal side effects, although they received a comparable mean dose of droperidol in the first 24 h (including a peroperative prophylactic dose of 2.5 mg).

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In their discussion, Sharma and Davies stated that "the mixture of morphine and droperidol appeared to be stable, as both drugs remained clinically effective and no precipitate was visible after 24 h". We wish to point out that the stability of morphine and droperidol mixed in plastic syringes has been confirmed using HPLC on samples over a 14-day period [3].

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Outliers and extrapolation: child’s age and infusion rates of mivacurium

Sir,—Drs Meroetoja and Ollkola have misunderstood my worries about their work on child’s age and infusion rates of mivacurium [1,2]. I was not suggesting that they should have removed the outliers and extrapolation: child’s age and infusion rates of mivacurium.

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Coughing during induction caused by morphinomimetic drugs

Sir,—Coughing during induction of general i.v. anaesthesia may be caused by the effects of morphinomimetic drugs. Although evidence concerning this mechanism is sparse, patients are known to occasionally experience coughing and an unpleasant, tight feeling in the throat at the moment of induction. Drummond, however, does not mention this in his editorial on upper airway reflexes [1].

Recent reports in the literature suggest that morphinomimetic drugs may enhance the effect of neuromuscular blockers and hypnoctics. Coghlan, McDonald and Csepregi stated that propofol 2.5 mg kg\(^{-1}\) with alfentanil 0.02 mg kg\(^{-1}\) gives better intubation criteria than propofol 2.5 mg kg\(^{-1}\) alone [2]. Alcock and colleagues concluded that alfentanil, as an adjunct to propofol to facilitate tracheal intubation, is more acceptable to patients than suxamethonium for day-case surgery [3]. When morphinomimetic drugs are given, they should be administered as early as possible in order to achieve an optimal effect. When morphinomimetic drugs are administered before hypnoctics, as in Coghlan's case, there is a possibility that coughing may occur at induction.

To investigate and establish the occurrence of coughing during induction of general i.v. anaesthesia using morphinomimetic drugs, we studied three groups of 100 patients each. The study design was open and not randomized. Patients undergoing general surgery were not premedicated before arrival in the operating theatre. ECG, pulse oximeter and non-invasive arterial pressure monitoring were commenced before induction of anaesthesia. Patients were given one of the following morphinomimetic drugs: alfentanil 0.01 mg kg\(^{-1}\) for short procedures, pritraimide 0.2 mg kg\(^{-1}\) for operations of medium duration or sufentanil 0.7 mg kg\(^{-1}\) for longer lasting operations. Five seconds later, patients received vecuronium 0.1 mg kg\(^{-1}\) and propofol 2.3 mg kg\(^{-1}\).

In the group receiving pritraimide, 31 % coughed during induction; in the alfentanil group 10 %, coughed, whereas no coughing was observed during induction with sufentanil. The differences between pritraimide and sufentanil and between pritraimide and alfentanil were significant (P < 0.001; Fisher's exact test (two-tailed)). The difference between alfentanil and sufentanil was also significant (P < 0.01).

From these data it may be concluded that coughing does not appear to occur during induction of general anaesthesia when sufentanil is used. However, it has been observed occasionally. Because of the low incidence of coughing it should be possible to administer sufentanil some time before administration of the hypnotic induction agent. This could considerably reduce the amount of hypnotic and neuromuscular blocker used, with resulting cost benefits. We suggest that when morphinomimetic drugs are administered before hypnotic agents during induction of anaesthesia, a drug such as sufentanil, which causes no coughing or tight feelings in the chest or throat, is preferable.

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Role of the LMA in tracheal extubation?

Sir,—We congratulate Drs Hartley and Vaughan on a long overdue review [1] of the problems of tracheal extubation. However, we wish to suggest a role for the laryngeal mask airway (LMA) in tracheal extubation, as a tool to reduce airway responses and cardiovascular disturbances.

To minimize the associated problems of the airway, including laryngospasm and inability to maintain a clear airway, the LMA may be substituted for a tracheal tube, either while the patient is still in a deep plane of anaesthesia or before antagonism of neuromuscular block. In our personal experience, subsequent removal of the LMA is less prone to airway incidents.

A second advantage of substituting the LMA is the much smoother extubation and associated diminished cardiovascular disturbance [2,3]. In terms of cost, the use of the LMA [4] compares favourably with the use of the pharmacological agents discussed (esmolol and labetalol) [5].

Of course, we caution against the use of the LMA in a patient at risk of regurgitation and aspiration [6].

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Comparison of the Belscope with the Macintosh laryngoscope

Sir,—We read with interest the article by Hodges, O'Flaherty and Adams [1] on comparison of the Belscope with the Macintosh laryngoscope for tracheal intubation in a mannikin.

We have completed a study in 20 patients (as yet unpublished) comparing the two types of laryngoscope with respect to cervical spine movement. Despite prior practice, intubation was significantly longer with the Belscope blade and was unsuccessful in two patients. Tracheal intubation was successful in all patients using the Macintosh blade. We were unable to demonstrate a difference in the amount of cervical spine movement comparing the Belscope and Macintosh blades. In our use of the Belscope blade was used with the prism attached, which increases the difficulty of use considerably. We wonder if Hodges, O'Flaherty and Adams have made any assessment of the Belscope blade when the prism is attached.

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