

special attention. Whether equally high correlations would occur with children and adolescents remains an object of investigation.

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Disconnect Alarm Failure

To the Editor:—In light of the frequency and potential morbidity associated with anesthesia breathing circuit disconnection¹ and pursuant recommendations that anesthesia ventilators be used in conjunction with patient disconnect alarms,* I wish to report a case of alarm failure following disconnection between the endotracheal tube adapter and the tube itself.

During the conclusion of coronary artery bypass surgery, with ongoing ventilation utilizing a North American Drager ventilator equipped with a Drager DPM (disconnect pressure monitor) set at 5 cmH₂O threshold, the breathing circuit (with a 8-mm endotracheal tube adapter attached) became dislodged from the endotracheal tube. The disconnection was subsequently discovered and the circuit reconnected prior to alarm from the oxygen analyzer, but I was curious as to the reason for failure of the disconnect monitor to alarm.

Subsequent trial with endotracheal tube adapters up to size 9-mm revealed adequate resistance to flow from the adapter alone to attain the selected 5 cm H₂O pressure threshold and prevent the monitor from alarming. Disconnect alarm failure of this type is similar to that

reported by McEwen *et al.*³ wherein partial "Y" connector occlusion by the patient's pillow occurred, but disconnection and failure of the type described above, by its nature, would seem more likely to recur.

The manufacturer is apparently aware of this shortcoming, and has modified the DPM now available to provide a 7.5 cmH₂O minimum pressure threshold. This correspondence is intended to alert those still using the earlier model DPM to be aware of this possible failure.

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Glycine and the Blood-Brain Barrier

To the Editor:—The observations by Ovassapian *et al.* on possible glycine-induced visual disturbances during transurethral resection of the prostate are interesting.¹ However, I disagree with their statement that glycine "readily passes the blood-brain barrier." There are good reasons for the central nervous system to shield

itself from intravascular fluctuations in glycine concentration. This is discussed in reference number 8 of their article.² An active transport system keeps the glycine CSF/blood concentration ratio at 0.05, one of the lowest such ratios of all the amino acids.³ Nevertheless, the observations of Ovassapian *et al.* are valuable and re-

quire an explanation. The fact that these patients had primarily visual disturbances may indicate that the "blood-retina barrier"³ does not prevent the entry of intravascular glycine into the interstitial spaces of the retina. If glycine does cause these disturbances, perhaps some visual test could be devised that would alert the anesthesiologist of significant intravascular absorption of irrigating fluid.

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Controversies Regarding the Prophylactic Use of Dantrolene for Malignant Hyperthermia

To the Editor:—In a recent letter, Dr. Dolan questioned the prophylactic use of dantrolene for malignant hyperthermia (MH).¹ I agree with him that there is confusion about the proper dose and the recommended ways to medicate the patient. When I first pretreated MH susceptible (MHS) patients with dantrolene in 1976, I used large doses ($4-8 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$) because of experience with the pig.² However, it was obvious at that time that this dose created numerous undesirable side effects such as slurred speech, ataxia, muscle weakness, blurred vision, nausea, and vomiting. This caused us to reevaluate our medication schedule with the drug. We found that a single oral dose four hours prior to anesthesia was more effective in blocking porcine MH than were much larger doses given for a period of two days. The dantrolene was administered four hours before anesthesia because the expected peak blood level from the oral route occurs at approximately that time.³ The gastrointestinal problems, particularly in children who would frequently vomit, caused us to further modify our technique of administration. Since 1977 our protocol for administration of dantrolene in MHS patients is to give a total oral dose of 2.2 mg/kg body weight (1 mg/lb), one-half the dose eight hours preoperatively, and one-half the dose four hours preoperatively. This means that the first dose should have a blood level equal to the drug's half-life and the second dose should be at its peak³ at the time of operation.

In the case reported by Fitzgibbons,⁴ there was no mention that the patient had received dantrolene prophylactically within eight hours of operation. The incomplete protection which she reported was similar to that which we found in the pig given relatively large doses of dantrolene for several days.² In order to get protec-

tion of the pig with multiple doses for several days, we had to administer $24 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{day}^{-1}$. Lower doses gave incomplete protection. I think the failure of the dantrolene in the case described by Fitzgibbons may have been more a problem of when it was given rather than how it was given.

I agree with Dr. Dolan that excessive pretreatment of the patient for several days with dantrolene increases the cost of hospitalization and probably offers little benefit for the patient. Using our regimen, one does not significantly increase the cost of hospitalization. In our institution, a 100-mg capsule of dantrolene costs \$0.17 with a dispensing charge of \$4.87. This is an inexpensive medication. The cost for 100 mg of intravenous dantrolene is \$138 for the drug and \$19.87 for administration. Intravenous dantrolene is an expensive medication, but less expensive than two additional days of hospitalization. Thus, the cost, using our oral regimen is not a major consideration in the prophylactic use of dantrolene.

Whether or not prophylactic dantrolene is necessary is a more important question which cannot be answered at the present time; I have asked the same question myself. With the present state of confusion concerning the etiology of and the proper anesthetic management protocol for MH, it seems prudent to protect the patient with dantrolene.

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