CORRESPONDENCE

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Editorial Note:—The Editorial Board recently approved a change in policy whereby galley proofs of Letters to the Editor are no longer returned to the authors. This step was taken to shorten the interval between acceptance and publication of Letters to the Editor from 5–6 months to 2–3 months. This month the Correspondence section is larger than usual as a result of a changeover from the old to the new policy. By enhancing the timeliness of the Correspondence section, we hope that this new policy increases the value of this section of the JOURNAL for our readers.

Platelets and Malignant Hyperthermia

To the Editor:—In their recent paper, Lee *et al.*[1] raised concern that the platelet may not be affected by malignant hyperthermia. However, the previous work of Basrur *et al.*[2] has established the presence of morphologic changes in platelets of pigs specifically related to malignant hyperthermia. These observations have recently been extended to humans by O'Toole *et al.*[3] It should also be noted that the five-fold higher centrifugal force and the smaller amount of heparin used by Lee *et al.*[1] deviate appreciably from the method of Solomons and Masson.[4] These differences are reflected in the high-performance liquid chromatography (HPLC) chromatogram of Lee *et al.*,[1] where the platelet extract gave a response ten-fold weaker than that of the preparations of Solomons and Masson.[4] This suggests an unacceptably poor yield of platelets or a selective platelet subpopulation being studied. Because Lee *et al.*[1] chose to eliminate the internal standard from their HPLC runs in order to save time, they could not alert themselves to the low adenosine triphosphate (ATP) levels relative to the recommended standard. This then led to the use of the HPLC detector at near maximum sensitivity with unnecessarily excessive baseline noise relative to adenosine monophosphate and hypoxanthine seen in the published chromatogram. In another variation of technique, Lee *et al.*[1] have neutralized their perchloric acid (PCA) extracts with KOH. In our hands precipitation of potassium perchlorate can absorb variable amounts of purines and is not recommended. Storage of the extracts is also not advisable. When these and other conditions explicitly stated in detail by Solomons and Masson[4] are adhered to, consistent results were found both at sea level and 3,000-mile altitude. Lee *et al.*'s group of patients are not homogeneous and have widely variable and incomplete clinical symptoms as the basis for the diagnosis of malignant hyperthermia.

In summary, differences in analytical technique preclude the comparison of the work of Lee *et al.*[1] with that of Solomons and Masson,[4] and independent evidence suggestive of the involvement of the platelet in malignant hyperthermia is available.

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In reply:—Dr. Solomon's claim that both our group and Kaplan's group were unable to repeat his work is correct. His claim that this irreproducibility is due to differences in technique is incorrect.

Interpretation of platelet morphology is currently filled with controversy. An excellent paper on the subject is recommended.[1]

Currently, the platelet contractile mechanism is believed to be different from that of muscle. Thrombin is believed to be the physiologic stimulus to platelet aggregation and contraction, while electrical stimulus and acetylcholine are the stimulus for muscle contraction. Moreover, the skeletal muscle filaments of actin and myosin are highly organized, while those filaments in platelets seem to be reticular prior to contraction and possibly radial postcontraction. We are dealing then with contractile mechanisms of two different natures dependent on two different physiologic stimuli.

The platelet fraction used by Solomons and Masson is not just large-size platelets, but also contains erythrocytes,

lymphocytes, and other plasma cells. Our technique of platelet preparation yields extremely pure platelet fractions with few, if any, other cell types present. Because the pure platelet fractions used in the test do not present the metabolic characteristics associated with malignant hyperthermia (MH), we question the cellular source of the changes found in Solomons and Masson's experiments. Moreover, O'Brien *et al.* have shown that Ca^{++}-dependent ATPase and other erythrocyte enzymes involved in ATP metabolism, as well as erythrocyte fragility, are directly affected in MH.[2] Perhaps Solomons and Masson's results are reproducible in erythrocytes or erythrocyte-contaminated platelet preparations only.

We agree that nucleotide fractions cannot be stored. In fact, they cannot be stored at an acid *p*H; the acid must be neutralized prior to storage or the nucleotides will be destroyed, as we demonstrated in our study.[3]

We agree with Solomons' observation that our patients exhibited widely variable clinical symptoms, but we strongly disagree with his impression that these clinical symptoms are incomplete. A clinical episode of MH is diagnosed by several, but not necessarily all, of the following symptoms, including muscle rigidity, and changes in arterial and venous blood gas values, core temperature, pulse, respiratory rate, serum creatinine kinase (CK), and myoglobin levels following administration of a triggering agent. All of our three patients who had MH reactions without follow-up muscle biopsies had many but not all of these symptoms. However, no disease requires all of its possible symptoms to exist, and MH is not an exception.

Laboratory analysis of muscle biopsy samples from seven of our ten MH-susceptible patients served, in these seven cases, to confirm our clinical diagnosis. While we are happy to have muscle biopsy results in these cases, it is well known that MH responses to triggering agents were originally observed, diagnosed, and treated in patients before the advent of laboratory diagnostic aids, and absence of such aids should not be misconstrued to indicate an incomplete or inaccurate diagnosis. Furthermore, if Solomons' platelet nucleotide assay had been effective in diagnosing MH, any diagnostic discrepancies between our test subjects would have been apparent in the nucleotide patterns from these patients. This was not the case.

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Another Approach to the Problem Airway

To the Editor:—Direct airway endoscopy for awake nasal intubation in problem situations was one of the early uses described for the flexible fiberoptic bronchoscope.[1] However, this technique is usually used in the operating room as a last resort approach to a difficult intubation. Under pressured conditions when the airway is compromised by secretions, blood, or edema, the failure rate is high. Patil *et al.* have described several mechanical aids for fiberoptic endoscopy using a mask with an endoscopic port or an oral airway with a Rowbotham connector.[2] They have also suggested the use of binasal airways for ventilation during oral endoscopic intubation. Rogers and Benumof devised a technique whereby a fiberoptic endoscope could be inserted through a plastic, oropharyngeal airway with a cylindric passage along the midlongitudinal axis.[3] Although undoubtedly useful, the techniques require special equipment not always immediately available and presuppose that the mouth can be opened. We have developed a means to approach the difficult airway avoiding the oral cavity in a controlled and safe manner, using only a standard nasal airway.

After sedating the patient, the nasal mucosa is vasoconstricted by a few drops of phenylephrine. Local anesthesia of the upper airway is achieved by topical application of lidocaine, supralaryngeal nerve block, and transcricothyroid block. A nasal airway fitted to an adapter connected to the breathing circuit of an anesthetic machine is inserted in one nostril (fig. 1). When awake intubations are indicated (*e.g.*, full stomach, facial fractures, *etc.*), oxygen delivery is maintained. Under elective circumstances, when difficulty in intubation may be anticipated, analgesia is achieved by breathing low doses of inhalation agents. Spontaneous respiration is maintained. A second nasal airway, slit lengthwise, is used as a guide