Anesthesiology
80:708, 1994

Should Malignant Hyperthermia-susceptible Patients Undergo Muscle Biopsy?

To the Editor:—In a recent editorial, Larach[1] discusses the use of diagnostic tests in patients suspected of being susceptible to malignant hyperthermia (MH).

In the article by Isaacs and Badenhorst[2] that serves as the substance for Larach's editorial, 4 of 171 patients (2.3%) who were clinically suspected of being susceptible to MH tested negative on caffeine halothane contracture testing—the gold standard! If you are the anesthesiologist responsible for these patients, how do you counsel them? Having been through the period when calcium uptake by the sarcoplasmic reticulum was a popular method of diagnosing MH,[3] I am often reminded of the futility of that diagnostic test by patients who show me their scars over their vastus lateralis muscle. Because my medical center relies on referrals for MH testing, frequently at added expense to my patients and with the requirement that they travel, I now believe it is in my patients' best interest to make an MH-susceptibility diagnosis on clinical grounds. (This typically results just in more attention to anesthetic care!)

Larach pooh-poohs such an approach because of the risks of anesthesia for patients considered MH-susceptible. I would like to offer suggestions with regard to her concerns about MH-susceptible patients presenting for medical care. For patients with acute epiglottitis (awake intubation during or after Dantrolene administration), those at risk for aspiration (high-dose nondepolarizer with or without Dantrolene), and those with asthma (many alternatives, including Dantrolene followed by ketamine), and for MH-susceptible patients with tetralogy of Fallot, refer to Larach, because the chance of these two rare disorders coexisting must be infinitesimal. In addition, I have instructed my rural dentists that both amides and esters are safe in MH-susceptible patients.[4]

Allen J. Hinkle, M.D.
Associate Professor of Anesthesiology and Pediatrics
Dartmouth–Hitchcock Medical Center
One Medical Center Drive
Lebanon, New Hampshire 03756-0001

References

1. Larach MG: Should we use muscle biopsy to diagnose malignant hyperthermia susceptibility? ANESTHESIOLOGY 79:1–4, 1993
2. Isaacs H, Badenhorst M: False-negative results with muscle caffeine halothane contracture testing for malignant hyperthermia. ANESTHESIOLOGY 79:5–9, 1993
3. Allen PD, Ryan JF, Jones DE, Mabuchi K, Virga A, Roberts J, Sreter F: Sarcoplasmic reticulum calcium uptake in cryostat sections of skeletal muscle from malignant hyperthermia patients and controls. Muscle Nerve 9:474–475, 1986
4. Dershwitz M, Ryan JF, Guralnick W: Safety of amide local anesthetics in patients susceptible to malignant hyperthermia. J Am Dent Assoc 118:276–280, 1989

(Accepted for publication November 24, 1993.)

Anesthesiology
80:708–709, 1994

In Reply:—I refer Hinkle to my recent ANESTHESIOLOGY editorial[1] for a detailed discussion of why I believe the caffeine halothane contracture test should continue to be used to diagnose patients in whom malignant hyperthermia (MH) susceptibility is suspected, even though Isaacs and Badenhorst report a 2.3% false-negative rate from their single laboratory.[2] To reiterate: no single clinical test for any disease will diagnose successfully all human subjects. If a diagnostic test has adequate specificity, it is not usually possible to achieve 100% sensitivity (zero false-negative responses).

I agree with Hinkle that responsible anesthesiologists should carefully evaluate the diagnostic tests they choose for their patients. All clinicians should determine whether proposed diagnostic tests have been described in at least one full-length research article in a peer-reviewed journal; successfully duplicated in multiple research institutions; and evaluated for sensitivity and specificity. The caffeine halothane contracture test does meet these criteria, unlike other putative diagnostic tests of MH. That clinicians have referred patients for investigational MH tests found subsequently to be of no diagnostic benefit[3] reflects the need for clinicians to educate themselves thoroughly about the predictive utility of tests they order, and should not be used as an excuse to cease efforts to develop better diagnostic modalities. It should be obvious that making inaccurate diagnoses can scar our patients emotionally, physically, and financially, but the decision to perform a test should be made only with prior knowledge of that test's limitations.

Hinkle advocates diagnosing MH on purely clinical grounds. However, I believe that, whenever practical, patients experiencing possible MH events should be referred for caffeine halothane contracture