

*Department of Anesthesiology
Albert Einstein College of Medicine
1300 Morris Park Avenue
Bronx, New York 10461-1602*

REFERENCES

1. Ovassapian A, Yelich SJ, Dykes MHM, Brunner EE: Fiberoptic nasotracheal intubation: Incidence and causes of failure. *Anesth Analg* 62:692-695, 1983

2. Schwartz D, Johnson C, Roberts J: A maneuver to facilitate flexible fiberoptic intubation. *ANESTHESIOLOGY* 71:470-471, 1989
3. Dellinger RP: Fiberoptic bronchoscopy in adult airway management. *Crit Care Med* 18:882-887, 1990
4. Roberts JT: Preparing to use flexible fiberoptic laryngoscope. *J Clin Anesth* 3:64-74, 1991
5. Stoelting RK: Endotracheal intubation, Anesthesia. 2nd edition. Edited by Miller RD. New York, Churchill Livingstone, 1986, pp 523-552

(Accepted for publication September 23, 1991.)

Anesthesiology
76:152, 1992

Burn Associated with Temperature Monitoring during Magnetic Resonance Imaging

To the Editor:—In a recent letter, Bashein and Syrový described two cases of burns associated with the use of a pulse oximeter during magnetic resonance imaging (MRI) under general anesthesia.¹ We have had a similar case in which a patient suffered a second-degree burn from the use of a temperature probe specifically designed for use during MRI.

A 10-yr-old patient underwent MRI of the lumbosacral spine during general anesthesia. Monitoring included an axillary skin probe that is part of the Omni-Trak Vital Signs Monitoring System (Invivo Research Inc., Winter Park, FL). At the end of the 2-h procedure, examination of the axillary area revealed a large second-degree burn. Conservative therapy resulted in resolution of the burn without scarring. Examination of the probe by both the personnel present and the institution's biomedical engineers did not detect any faults in the probe.

Although equipment specifically designed for the MRI setting has been constructed to minimize both interference with the image and interference of the MRI on the monitor's signal,² it is still possible for enough heat to build up to generate a skin burn, especially if the monitor shielding is inadequate or the monitor cable is looped.³ Neither fraying nor looping was observed in this case, although the bed was moved in and out of the scanner, with consequent movement of the cable. Because of this problem, we have switched to intermittent sampling between scanning sessions as a reasonable alternative to constant sampling. Also, all monitor cables are examined after each change in patient position to prevent inadvertent cable-heating from coiling.

STEVEN C. HALL, M.D.
Associate Professor of Clinical Anesthesia

G. W. STEVENSON, M.D.
Assistant Professor of Clinical Anesthesia

SANTHANAM SURESH, M.D.
Instructor of Clinical Anesthesia

*Children's Memorial Hospital
Northwestern University Medical School
2300 Children's Plaza
Chicago, Illinois 60614*

REFERENCES

1. Bashein G, Syrový G: Burns associated with pulse oximetry during magnetic resonance imaging (correspondence). *ANESTHESIOLOGY* 75:382-383, 1991
2. Karlik SJ, Heatherley T, Pavan F, Stein J, Lebron F, Rutt B, Carey L, Wexler R, Gelb A: Patient anesthesia and monitoring at a 1.5-T MRI installation. *Magn Reson Med* 7:210-221, 1988
3. Kanal E, Shellock FG, Talagala L: Safety considerations in MR imaging. *Radiology* 176:593-606, 1990

(Accepted for publication September 30, 1991.)

Anesthesiology
76:152, 1992

In Reply:—The authors correctly point out that "looping" of conductors within the magnetic resonance imaging (MRI) bore can increase burn risk. These loops permit better coupling of the radiofrequency excitation pulses onto the conductors by essentially forming efficient antennae. We also suspect a cross-coupling effect between essentially straight, but multiple, conductors used within the MRI bore.

Specifically addressing burn from surface temperature sensors, Invivo Research Inc. would also like to point out that, in addition to the need for careful patient preparation of monitoring lead wires and constant user vigilance, the directions for use of the temperature monitoring feature given in our users' manual and reference card advise

setting the upper temperature alarm limit to provide warning of probe tip heating. This precaution might have eliminated the occurrence of this unfortunate event.

ROGER SUSI
*President
Invivo Research Inc.
4420 Metric Drive, Suite A
Winter Park, Florida 32792*

(Accepted for publication September 30, 1991.)