**Occupational Latex Allergy**

The End of the Innocence

ANESTHESIOLOGISTS are exposed to an intriguing array of occupational hazards: explosive gases and waste gases, ionizing radiation and non-ionizing laser radiation, various infectious disease concerns, and more recently, the acknowledgment of chemical dependency. Another occupational risk has evolved since the inception of universal precautions: chronic exposure to high levels of allergenic and potentially lethal latex protein in the operating room and other areas anesthesiologists frequent.

In this issue of ANESTHESIOLOGY, Brown et al. report their findings with regard to latex sensitivity among members of the Johns Hopkins Department of Anesthesiology and Critical Care Medicine. Although a 24% incidence of irritant or contact dermatitis and a 12.5% incidence of latex-specific IgE positivity are sobering, it is hardly surprising in 1998. Perhaps more significant is the observation that 10% were clinically asymptomatic although IgE positive. Why then, is this such an important article? First, it satisfies the clinician as well as the skeptic who, like Lord Kelvin, needed numbers for a convincingly scientific imprimatur. Two.

Investigation of latex allergy began shortly after the promulgation of universal precautions and the ensuing flurry of clinical reports about latex allergy in the late 1980s and early 1990s. Although a direct correlation between protein content and allergenicity has not yet established, the technology now exists for the quantification and characterization of latex protein glove content. In addition it is clear that glove powder binds latex protein and is capable of enhancing aerosol spread of latex proteins. Longitudinal studies of dental students indicate a steady increase in the prevalence of latex allergy to approximately 10% in the tenth semester. Moreover, there is an animal model of progressive sensitization after latex exposure. Finally, powderless, low antigen gloves are effective in reducing aeroallergen levels of latex protein to levels comparable to nonsurgery days in the operating room (fig. 1).

The essence of the authors' message about the 10% of their colleagues who have latex-specific IgE but are asymptomatic is embedded within their statement "we believe that these individuals are in their early stages of sensitization and perhaps, by avoiding latex exposure, we can prevent their progression to symptomatic disease." There is some evidence that this may be the case. As unintentional bellwethers, those affected (albeit still few) who are forced to avoid a latex-laden environment have demonstrated some reversibility of their allergy. This is probably what happens when people who are suspicious that they are developing latex allergy symptoms modify their own work habits. The authors refer to another article of theirs that suggests this phenomenon.

Because the evolution of occupationally acquired illness is so socially visible, there will be neither a shortage of skeptics nor zealots. Among the skeptics, employers will be concerned about the liability and expense incurred in the diagnosis, counseling, evaluation, vocational rehabilitation, and therapy of such people, as well as disability compensation and payment for non-negligent injury. Insurers (disability, health, and life) will share a financially oblique view of the same issues. Those affected may be their own worst enemies in maintaining an illusion of well-being in the very setting that is detrimental to their health. Likewise, coworkers may distance themselves cognitively and literally lest they become the next target. They also, legitimately, fear that they may have to change their own practices, such as wearing non-latex products, at some potential risk to themselves. Finally, patients may soon become concerned that they may acquire health care provider harbored illnesses from those health care workers who choose to wear non-latex gloves.

On the other hand, the zealots might wish to embark on a crusade against latex products altogether. The fact

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Mean latex aeroallergen levels during a 12-h sampling period in an operating room during 19 nonsurgery days and during 28 surgery days when either low antigen (LA) or high antigen (HA) latex gloves were in use. Aeroallergen levels on HA glove days were significantly higher than on LA glove days ($P < 0.001$) and on nonsurgical days ($P < 0.001$); aeroallergen levels on LA glove days were slightly higher than on nonsurgical days, although this difference was not statistically significant ($P = 0.07$). Note logarithmic scale on $y$ axis. (From reference no. 8, reproduced with permission.)

is that such a strategy, however much desired by some, would likely be counterproductive if not risky in itself. The barrier protective qualities of non-latex products may not be as good as latex—yet. Moreover, latex products possess characteristics of stretchability and deformability that, in general, remain superior to current product alternatives.

In addition to the recent guidelines by FDA and NIOSH, which have called attention to the problem of occupationally acquired latex allergy,10,11 six state legislatures (Indiana, Minnesota, Nebraska, New York, Oregon, and Wisconsin) currently have before them bills recommending against the use of powdered or powdered, high-antigen gloves. This has been of significant concern to the ASA as well, prompting the following resolution:1

WHEREAS, As many as 8% of the general population are allergic to products containing latex and are thus subject to severe intraoperative allergic reactions; and

WHEREAS, As many as 20% of anesthesiologists develop sensitization to latex and are thus vulnerable to allergic reactions both as health care providers and as health care consumers; and

WHEREAS, several State legislatures have considered or will soon consider bills to regulate use of latex containing products; and

WHEREAS, the National Institute of Occupational Safety and Health has issued an alert regarding occupational exposure to latex products in the workplace; therefore be it

RESOLVED, That a Committee of the President’s choice be asked to formulate and publish recommendations for practice which would protect patients and limit anesthesiologists’ exposure to latex.

Our position is perhaps best summarized by quoting the pithy English author Anthony Burgess: “Awareness will not be a redemptive grace.”12 Sponsored programs of research and education currently supported should be expanded, with regulatory and legislative backing for what may prove to be an epidemic of concern to all health care workers and their patients. The following measures would be a good addition:

1. The immediate avoidance of powdered, high-antigen latex products by the consuming public and health care professionals.

2. Product labeling of natural rubber latex content and allergenicity. This effort is critical so that the public (medically trained as well as non-medically trained) can make informed decisions about the risk–benefit ratio of high antigen exposure. At the same time, the benefits of low antigen latex products among those not already allergic to latex should continue to be recognized, thus preserving the term “latex-safe” rather than “latex-free.”

3. Research into natural and synthetic product alternatives. For example, Parthenium argentatum and Ficus elastica may be excellent sources of natural rubber latex without the allergenicity of latex protein from Hevea brasiliensis.13

4. A re-examination of the role of institutions in the support and counseling of workers who have spent a lifetime acquiring professional skills that are not easily or cheaply replaced. In this context, occupational counseling, starting at the beginning of training for all health care workers, seems well advised.

There are some 38,000 anesthesiologists and 30,000 nurse anesthetists practicing in the United States today.† Can we really assume that approximately 6,800 anesthesia personnel are sensitized and more than 1,700 are overtly allergic to latex? The clinical experience and

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* 1997 Annual Meeting, Resolution no. 17.
† As of March 1998, courtesy of the membership offices of the American Society of Anesthesiologists and the American Association of Nurse Anesthetists.
the science is remarkably consistent over the past 10 years, and suggests the answer is yes. Should one continue working in an environment with powdered, high-antigen latex gloves capable of sensitizing those exposed with a prevalence of 12.5% and a clinically allergic prevalence of 2.5%? Don’t bet your life on it.

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Anesthetic Agents and Hypothermia in Ischemic Brain Protection

ANESTHETICS can affect ischemic injury by numerous mechanisms, and their potential for cerebroprotection is clinically relevant. The effects of anesthetics have been widely studied for the past three decades in various animal models of cerebral ischemia. The magnitude of their neuroprotective effects has been variable depending on the experimental animal model, severity of the ischemic insult, and the choice of anesthetic.

In this issue of Anesthesiology, Miura et al. have demonstrated the differential effects of anesthetics on outcome from near-complete but not incomplete global ischemia in the rat. The logical and dramatic conclusion from this study is that metabolic suppression is not the major mechanism by which anesthetics provide neuroprotection. This is an important finding that needs to be incorporated into our current rationale for care in the clinical arena. Reducing cerebral metabolic rate

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