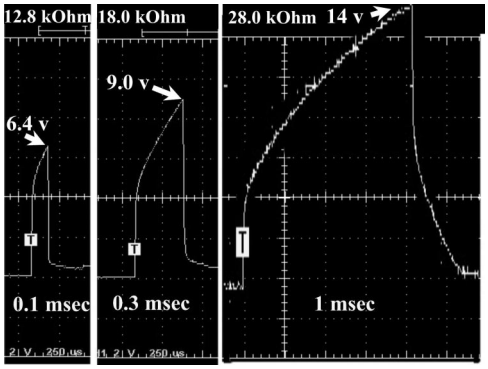

Fig. 3. Voltage–time curve in a human subject. Example of the voltage response after applying 0.5 mA with a 0.1, 0.3, and 1 ms pulse width, respectively, *via* a 24-gauge insulated needle placed extraneurally.

practical interpretation of impedance changes in a commercially available nerve stimulator in a pilot study carried out in a porcine model. The true value of this study lies in the detection of impedance changes that signify intraneural needle placement. Depending on the species, the noted change in impedance may be an increase or a decrease, and it may even be transient in nature. As it is said in a famous Chinese proverb attributed to Deng Xiaoping for his pragmatic policies, *"It doesn't matter if a cat is black or white; as long as it can catch mice, it's a good cat."*

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Nitrous Oxide: A Global Toxicological Effect to Consider

To the Editor:—The recent review article by Sanders *et al.*[1] was informative and comprehensive, with the exception of one important toxicological detail. Nitrous oxide is known to have a significant global climatologic impact as a naturally occurring greenhouse gas. After carbon dioxide and methane, nitrous oxide is the third most climatologically significant greenhouse gas. Greenhouse gases act like a warming blanket in the troposphere and prevent radiative cooling. Nitrous oxide is a particularly potent greenhouse gas with 300 times the global warming potential of carbon dioxide over 100 yr, according to the Intergovernmental Panel on Climate Change.[2] It seems prudent to include the climatologic effects of nitrous oxide as a biologic effect of the gas.

The climatologic effect and global warming potential of all halogenated anesthetic agents was addressed in a 1989 article, in the journal *Nature*, by Brown and colleagues. They concluded that the relatively short atmospheric lifetime of these agents reduces their ozone-depleting impact and global warming potential significantly, relative to other chlorofluorocarbons.[3] Desflurane has a global warming potential 1,341 times more potent than that of carbon dioxide when considered over a 100-yr period.[4] Langbein *et al.* reported that the atmospheric effects of all the halogenated anesthetics combined produce a relative contribution to global warming of .03%.[5] Nitrous oxide, in contrast, has a long atmospheric lifetime of approximately 120 yr.* The vast majority of atmospheric nitrous oxide from human activity is released from combustion and agricultural soils, particularly after the use of nitrogenous fertilizers. Although anesthetic nitrous oxide is believed to constitute a proportionally small amount of all atmospheric nitrous oxide by volume, the exact relative global warming contribution from all medical and dental anesthetic use remains to be studied.

Carbon dioxide regulation has begun, and nitrous oxide emissions are targeted by the 1997 Kyoto Protocol. Nitrous oxide is likely to be further regulated after adoption of the next climate change treaty at the 2009 United Nations Climate Change Conference in Copenhagen, Denmark. Nitrous oxide's potency as a greenhouse gas and the potential for regulation under international climate change accords argue for inclusion in any review of the biologic effects of this gas. Climate change is an important global-scale biologic crisis. International dialogue and reporting are essential to find solutions to this issue.

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