■ CORRESPONDENCE

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Propofol Use during Neuropsychiatric Examination under Sedation

To the Editor:—A recent review of the clinical uses of propofol[1] prompted us to call attention to yet another application of this drug: propofol sedation for diagnostic and exploratory neuropsychiatric examination.

We were consulted on the case of a 22-yr-old woman who had been admitted after an assault that left her unable to move her legs. She was alert although mildly intoxicated and was capable of slight flexion of her right hip, with no movement on the left side and no perception of pinprick below the level of L1. A noncontrast computed tomography scan, a myelogram, and a magnetic resonance imaging scan of the spine revealed no bony fractures or dislocations, free passage of dye in the lower spinal fluid, and no extrinsic or intrinsic lesion of the spinal cord.

Initially, the patient was treated with a large dose of steroids, with a working diagnosis of paraplegia due to spinal cord contusion, and over the next 24 h, there was minimal improvement. Some anomalous findings appeared in her examination however: Her sensory level descended to mid-thigh but then was found to have a nondermatomal distribution. She also had preserved reflexes in both lower extremities. She had normal rectal tone and was voiding without difficulty. Her neurologic examination results remained stable for the next week, and tests of somatosensory evoked potentials and electromyograms had normal results.

This patient's differential diagnosis now included paraplegia due to cord contusion and a conversion reaction. The inconsistency of her neurologic findings and the emergence of some specific psychologic (affective) issues lent strength to a diagnosis of conversion reaction, and lack of improvement mandated exploration.

The neuroanesthesia service was consulted for help in conducting an evaluative neuropsychiatric study with sedation. This was planned to include three examinations, each comprised of an abbreviated mental state examination with relevant tests of motor and sensory functions, to be performed before, during, and after recovery from a sedative.

Propofol was suggested as the agent of choice because of its easily titrated rapid action and recovery with minimal residua. The effect of libidinal disinhibition, which is sometimes associated with this drug, also was discussed.[2] Although this was not considered a contraindication to its use, there was some interest in whether, if propofol were found particularly effective in this setting, it could have some bearing on the historic perception of conversion reactions as being libidinally based.[3]

After discussion with the patient, informed consent was obtained for the procedure. Monitoring included electrocardiogram, pulse oximeter, and noninvasive blood pressure (Dinamap). Oxygen was administered with nasal cannula at the rate of 2 l/min to maintain normal oxygen saturation, and a peripheral intravenous line was inserted through a 20-G cannula.

After a baseline neuropsychiatric examination, propofol was infused at the rate of 300 $\mu g \cdot kg^{-1} \cdot min^{-1}$ until deep sedation was achieved. At this point, the infusion was discontinued and, as soon as feasible, the second examination conducted. While still under the influence of propofol and in a hypnotized-like state, the patient's sensorimotor examination had improved significantly. With verbal encouragement, she was able to stand and take several steps, and her sensory level had descended from mid-thigh to mid-calf. In a few minutes, while resting in bed, she regained her normal state of alertness, and the third and final neurologic examination was performed. She again had lost much of her quadriceps power, although there was some minor improvement from her baseline performance. Her sensation was improved by descending about 10 cm down her left leg, maintaining its nondermatomal distribution. She had no recollection of the events during this evaluation, and she immediately asked the neurologist and neurosurgeon about the results of the test. She was given positive feedback.

The evaluations in this study were performed by a neurologist, a neurosurgeon, and a psychiatrist who were present throughout. In subsequently reviewing the results and drawing conclusions, their opinions were sought concerning observable differences resulting from the use of propofol compared with their prior experience of amobarbital sodium during this type of examination. There was agreement that the study benefitted from her faster recovery from propofol than had been seen in similar examinations using barbiturates, making comparison between the three phases of the examination simpler.

We suggest that propofol offers an alternative to barbiturates during the conduction of neuropsychiatric evaluation with sedation. Although further evaluation is required and awareness of its potential for libidinal disinhibition should be considered, this agent is a reliable, widely used anesthetic agent that is easy to titrate and safe when used with available respiratory support. The rapid return of the presedation state of alertness with propofol use is advantageous in that it provides the conditions for a valid examination at completion of the study.

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TEC 6 Power Cord Problem

To the Editor:—We wish to share with your readers a potentially serious fire hazard encountered with a 6-month-old TEC 6 (Suprane) vaporizer. The vaporizer, mounted on a North American Drager 2B anesthesia machine, was noted to be emitting sparks and smoke around the mains lead connection. The vaporizer concentration dial was set to the off position, but the vaporizer was on (*i.e.*, energized). The anesthesia resident quickly unplugged the vaporizer at the outlet. The machine, the vaporizer, and all the electrical connections were immediately sequestered for further study. No patient harm occurred.

The Hospital Biomedical Engineering Department findings showed the following:

1. The vaporizer and mains lead (power cord) connection had been installed properly by a North American Drager service representative.
2. An examination of the electrical power cord and the ceiling receptacle showed that the integrity had not been compromised, and both were found to be in compliance with existing national electrical Code Section 517.
3. The TEC 6 vaporizer was sent to the Ohmeda plant in England, and the following communication was received from the company:

> A visual examination of the vaporizer socket and mains lead showed the presence of charred plastic residue. This residue was cleaned from the vaporizer socket. Close scrutiny of the live pin of the socket showed the presence of pitting caused presumably by the reported arcing. This pitting was confined to the tip of the live pin.
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> After the cleaning of the socket the vaporizer was powered up. The vaporizer went through the normal 'Warm-up' phase and into 'Operational'. At no time did the unit arc or smoke. The unit has now been powered up in excess of 12 hours with no abnormal effects.
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> The position of the pitting indicates that the power cord plug was not fully engaged. This conclusion is reached because if a power cord plug were not to be properly engaged in the socket and the lead pulled then the pitted pin would be the first to break contact. This break in contact could produce arcing (pitting) and subsequent smoking caused by the degradation of the adjoining plastics.
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> In conclusion, we could find no faults with the vaporizer that would cause arcing or smoking. We believe that the cause probably was a loose power cord plug.

Having personally observed the proper vaporizer installation in October, 1993, we believe that in its six months of use, the power cord plug became partially disconnected. Subsequently, we were informed by Ohmeda that there has been at least one other TEC 6 vaporizer arcing and smoking problem attributed to the same cause. We have therefore concluded that if the power cord connection is so critical as to be a potential fire hazard in the OR, then serious consideration should be made toward redesigning that connection to the vaporizer to prevent further partial disconnects.

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In Reply:—Ohmeda wishes to take this opportunity to respond to the letter from Farmer and Zelman. The authors describe a rare and unusual occurrence with the power cord connection on an Ohmeda TEC 6 vaporizer.

The connector and receptacle conform to IEC standards and are constructed from UL listed VO materials that do not support combustion when the source of ignition is removed. This is consistent with the two reports of this occurrence, when the presence of an odor and some smoke was reported, but no fire was observed.

The power cord connector and receptacle have been configured