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A Less than Rude Awakening . . .

To the Editor:—A 29-yr-old woman with idiopathic scoliosis was scheduled for posterior spinal instrumentation with an intraoperative wakeup test. The patient spoke only Vietnamese. Because of the anticipated difficulty in securing an interpreter during the surgical procedure, we resorted to the following alternative. During the preoperative interview, the patient's sister was available as an interpreter. After an explanation and rehearsal of the intraoperative wakeup, her sister repeated in Vietnamese the phrase "move your feet" approximately 20 times into a portable tape recorder.

On the operative day, the tape was played through headphones during the scheduled wakeup period with excellent patient response. The patient was promptly reanesthetized and the procedure was completed uneventfully. At the postoperative visit, the patient's only reported recollection of the surgery was the familiar voice of her sister asking her to move her feet.

Interpreters will remain a common method for managing this circumstance; however, the use of recorded commands obviates the problems inherent in the uncertainty of interpreter availability. It further serves to limit operating room traffic with its attendant risk of infection. It has the additional advantage of presenting the patient with a familiar and reassuring voice, perhaps that of a close relative, during an event that is otherwise potentially frightening.

Our approach did, however, contain a weakness that we will address on subsequent occasions: had the patient not moved her feet in response to the recorded commands, it would have been necessary to elicit a motor response from above the site of the potential lesion. Commands such as "open your eyes" or "wiggle your fingers" should be included in the repertoire of recorded material available for intraoperative use. Recorded messages may assist in providing a more effective and pleasant intraoperative wakeup for non-English-speaking patients.

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Use of a Cervical Collar during Monitored Anesthesia Care

To the Editor:—Monitored anesthesia care during ophthalmologic procedures can sometimes be disconcerting. When heavy sedation is required in the aged population, airway obstruction can result.

At Meridia Huron Hospital, we have been using a soft cervical collar on these patients for over 2 yr. We have found this collar to be quite comfortable for the patient and well-liked by the ophthalmologists. The collar helps maintain a patent airway and also eliminates snoring in a number of cases. The ophthalmologists have also reported that their patients move less during the procedure.

We highly recommend this simple procedure to all anesthesiologists performing monitored anesthesia care for patients undergoing ophthalmologic procedures.

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Etiology of Pain and Altered Consciousness following Epidural Injection of Morphine

To the Editor:—The Clinical Report by Du Pen *et al.*[1] of a patient having pain and altered consciousness upon epidural injection of preservation-containing morphine raises three points which require comment.

First, a number of patients with chronically inserted epidural catheters experience pain upon injection that is variously described as burning or pressure, or may, in some cases, have a radiating, even radicular, pattern. In most cases, reinsertion of the catheter, as in the reported patient, leads to resolution of pain with injection. It is also possible that if there was a leak from either the catheter or the epidural space and the drug was injected subcutaneously this may cause pain. The preservative in the morphine of the clinical report was phenol and formalin. Phenol has been used extensively for neurolysis and, most recently, it has been reported to have been chronically administered epidurally for cancer-related pain.[2] The patient in this report had pain that occurred concurrently with a change to preservative-containing drug. This is suggestive, but should not necessarily be interpreted as causal. The final concentration of phenol injected in this patient was 0.05%. It may be that local irritation and fibrosis had occurred from the implanted catheter and injection of any substance, preservative-containing or not, may have caused pain. It is unfortunate that the authors did not inject preservative-free morphine prior to catheter replacement and inject preservative-containing morphine after catheter replacement to test the "preservative" hypothesis.

Second, the authors infer that the dose of administered preservative accounted for the patient's altered state of consciousness. I think the authors have ignored the basic pharmacokinetics and pharmacodynamics of epidurally administered morphine. It has been shown that the CSF levels of morphine after epidural administration will be two to three orders of magnitude higher than after other parenteral administration methods.[3] Thus it is no surprise that the patient's level of consciousness cleared when a change in route of administration of a similar dose of morphine was made.

Third, the patient experienced good pain relief after reinsertion of his epidural catheter at a different site. This may reflect closer proximity to the involved segments or better spread of the injected drug.

I think it is important to be concerned about the spinal administration of preservative-containing drugs, but it is also important to practice cost-conscious medicine. Avoidance of these products should not be based on this case report, since alternative explanations for the findings are probable.

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In Reply:—Dr. Oden points out many concerns regarding our case report and the conclusions drawn from that report; he offers alternative explanations for the reported observations. In general, Dr. Oden's conceptual error occurred because he attempted to apply the acute pain model to our chronic cancer pain patient.

Dr. Oden's first concern is over our conclusion that the phenol-formaldehyde preservative containing morphine caused the increased pain.[1] Our experience, covering several hundred temporary epidural catheters and over 225 permanent catheters, has shown us that pain on injection due to catheter position is of a dull aching or radicular pattern and epidurograms show catheter tip in the lateral epidural space close to nerve root location. In this case, the epidurogram showed no such catheter tip location or leakage of dye outside of the epidural space. The epidurogram did, however, show dye flow that was neither characteristic of a closed space seen with epidural infections or chronic inflammatory and fibrosis, but a spread of dye four spaces above and five spaces below the catheter tip which had non-specific areas of non-filling. The concern over infection lead us to avoid the use of the catheter until the results of the culture had been returned. During the 3 days of iv therapy and further diagnostic studies, the catheter was found to be displaced from the epidural space, the reason the catheter was replaced. Although there is not absolute proof that the phenol-formaldehyde preservative mixture was the causative agent, we feel that the epidurogram results, the negative cultures, and the relief of symptoms are enough presumptive evidence to incriminate the preservative as the causative agent.

The second concern is over whether or not the preservatives accounted for the patient's altered state of consciousness. The assumption that acute CSF mor-