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### Is Midazolam Desirable for Sedation in Parturients?

*To the Editor:*—We would like to report an observation concerning the use of midazolam (Versed®) for conscious sedation. It is common practice in our obstetric unit to administer small doses of diazepam and/or fentanyl (after the umbilical cord is clamped) to parturients experiencing minor discomfort during cesarean delivery under regional anesthesia. No adverse effects have been seen from this practice except for the frequent complaint of pain on injection produced by intravenous diazepam. We have recently begun to use midazolam, a water-soluble benzodiazepine, because of decreased pain after iv injection.<sup>1</sup> Other advantages claimed for midazolam are better amnesia and sedation when contrasted to diazepam.

We have recently treated several parturients with midazolam in doses of 2–7 mg iv that resulted in clinically satisfactory sedation during their cesarean delivery. These women, however, when interviewed 24–48 h postoperatively, complained of having no recall of the birth of their babies.

We suggest that the superior amnestic qualities of midazolam may be counterproductive in the obstetric unit by depriving new mothers of the memory of their birthing experience.

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### Succinylcholine in Peripartum Patients

*To the Editor:*—The article entitled “Succinylcholine pharmacodynamics in peripartum patients”<sup>1</sup> reports lower serum cholinesterase activity in both term and postpartum patients than in nonpregnant patients not using oral contraceptives. In addition, recovery of twitch response (injection to 25% recovery time) was prolonged in postpartum patients, but all four groups showed similar 25–75% recovery times. The authors hypothesized that succinylcholine duration is prolonged in postpartum patients because of its slower elimination, but not in pregnant patients at term because the volume of distribution of succinylcholine is increased and this offsets the reduced rate of elimination in term patients.

Further mathematical treatment of the authors' data may be informative. If it can be assumed that succinylcholine is eliminated by apparent first-order kinetics and its metabolite(s) are inactive, then the duration (t) and the rate of decline (R) of effect (paralysis) in the linear (25–75%) range can be related using the following equations, as derived previously for succinylcholine.<sup>2,3</sup>

$$t = (2.3/k_{10})(\log A^0 - \log A_{\min}) \quad (\text{Eq. 1})$$

$$R = m(k_{10}/2.3) \quad (\text{Eq. 2})$$

$$t \times R = m(\log A^0 - \log A_{\min}) \quad (\text{Eq. 3})$$

where  $k_{10}$  is the apparent first-order rate constant for drug elimination from its site of action,  $A_{\min}$  is the minimum effective dose, and  $m$  is the slope of the log dose ( $A^0$ ) response relationship for the relaxant. Thus, according to these three equations, four pharmacokinetic factors determine the duration and rate of decline of effect, with three of these terms ( $m$ ,  $A^0$ , and  $A_{\min}$ ) appearing on the right side of equation 3, while  $k_{10}$  is implicit on the left-hand side but cancels out as such. Thus, in a group of patients given the same drug dose but showing different durations of effect, the product of duration (t) and rate of decline (R) of effect will yield a constant value if the differences in the observed time course of effect are solely the result of differences in  $k_{10}$ , the elimination rate constant. If, however, the values of  $t \times R$  differ between the patients, then it must be concluded that these patients differ with respect to  $m$  and/or  $A_{\min}$  and/or  $k_{10}$ .

The results obtained in the four patient groups of