sciatic nerve, such as with a gluteal approach, allows greater discrimination between a sciatic nerve injury because of the block as opposed to the tourniquet or the surgery.

Competing Interests

The author declares no competing interests.

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(Accepted for publication March 5, 2015.)

In Reply:

We thank Dr. Merman for her comments regarding the novelty of our study,[1] the duration of analgesia provided by a single-shot sciatic block, and the safety concerns associated with using a distal sciatic block in the setting of knee arthroplasty.

Although the work published in 2004 by Ben-David *et al.*[2] may signal a benefit to sciatic block in treating posterior knee pain after knee arthroplasty, any conclusions drawn from this trial are significantly undermined by its observational design and limited sample size of only 12 patients. In the 2005 randomized trial by Pham Dang *et al.*,[3] neither the patients nor the assessors were blinded, and the authors did not specifically examine the effect of sciatic block on posterior knee pain. Therefore, neither of these two earlier studies can be considered definitive.

We agree with Dr. Merman that a continuous catheter-based perineural infusion can prolong the duration of analgesia associated with sciatic nerve block; however, the clinical importance of prolonged sensory blockade may be offset by a delay in mobilization, a critical requirement in the contemporary clinical pathways that emphasize early ambulation.

Finally, we aimed to definitively quantify the analgesic benefits of sciatic nerve block after knee arthroplasty, and our results suggest that both proximal and distal sciatic nerve blockade similarly improve analgesic outcomes. Our study was not sufficiently powered to demonstrate differences in the rate of block-related nerve injury. Although Dr. Merman's comments regarding the safety of tourniquet use in the immediate vicinity of a perineural injection around the popliteal sciatic nerve may seem reasonable, these concerns remain speculative.

Competing Interests

The authors declare no competing interests.

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(Accepted for publication March 5, 2015.)

Propofol-induced Electroencephalogram Dynamics: A Missing Piece

To the Editor:

We want to congratulate Akeju *et al.*[1] for their interesting work on the electroencephalographic dynamics of propofol- and dexmedetomidine-induced loss of consciousness (LOC). Nonetheless, we feel that some details should be added in order to apply the provided information to the clinical practice.

The authors used an effect-site (ES) target-controlled infusion (TCI) of propofol starting with a target concentration of 1 μg/ml up to 5 μg/ml and staying 14 min in each target. However, they missed referring which pharmacokinetic model was used to calculate the ES concentrations and to drive the propofol infusion. Some authors used a similar approach in another study[2] to induce LOC with propofol, where *probably* the Schnider model[3,4] was used and *presumably* LOC occurred at 2 μg/ml, which seems to be a very low ES concentration to induce LOC.[5–7]

From a pharmacokinetic/pharmacodynamic point of view, it would be interesting to correlate the electroencephalographic

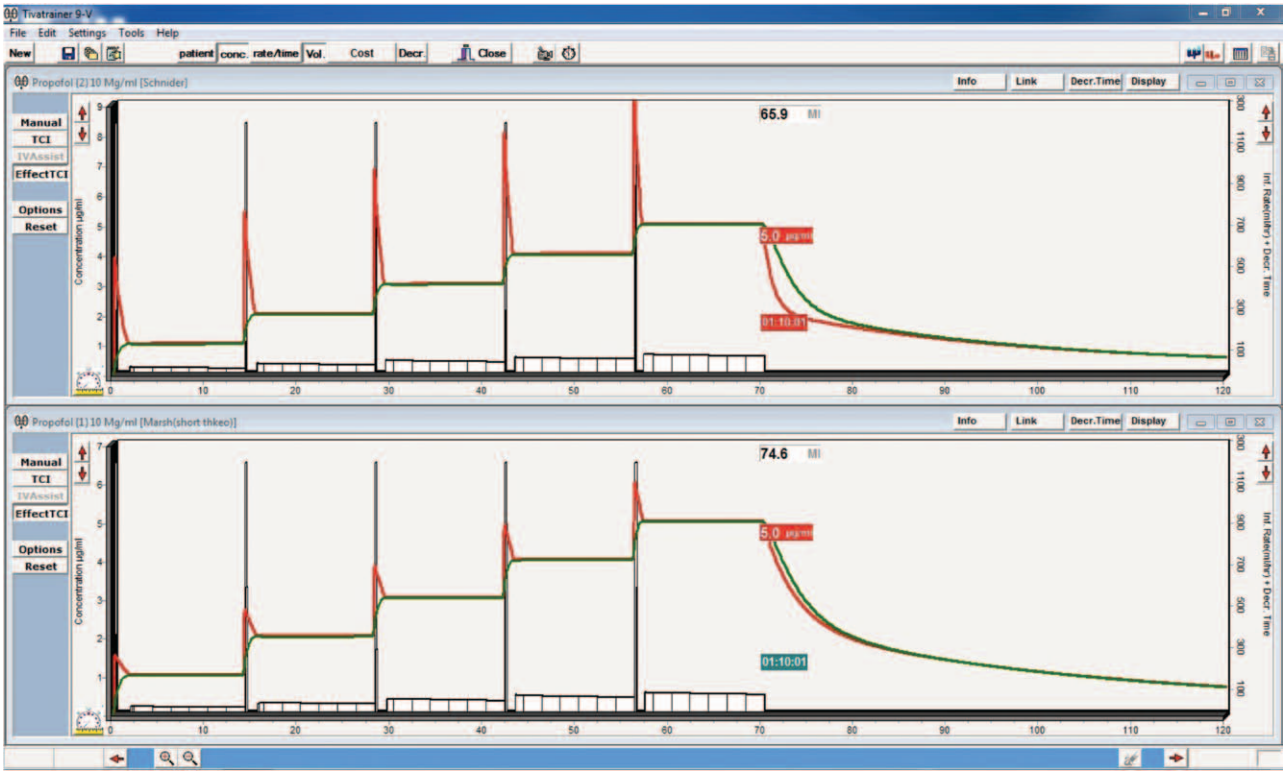

Fig. 1. Simulation of the propofol infusion scheme reported by Akeju *et al.*,[1] with the two different pharmacokinetic models using Tivatrainer® software (Gutta BV, The Netherlands). TCI = target-controlled infusion.

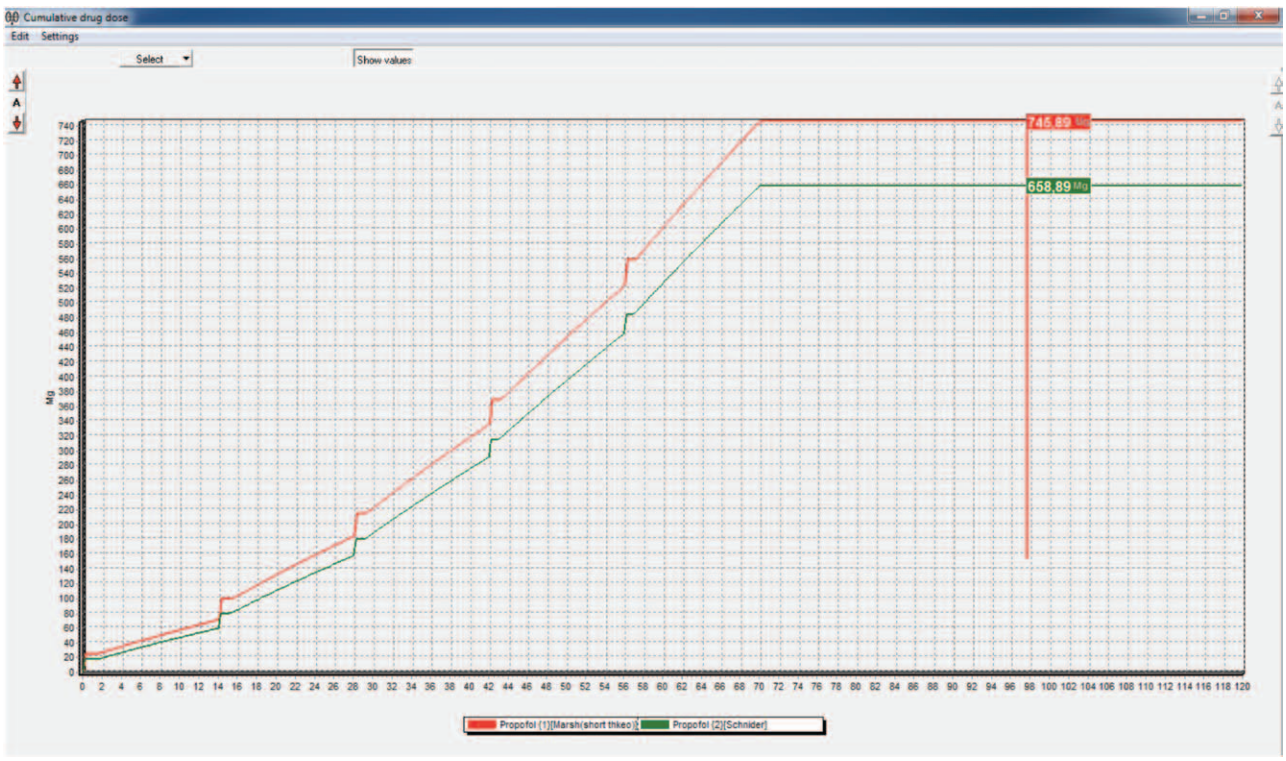

Fig. 2. Simulation showing the amount of propofol administered by each pharmacokinetic model according to the infusion scheme reported by Akeju *et al.*[1]

changes with the predicted ES concentration and the total administered propofol (*e.g.*, at what ES concentration should we expect the occurrence of alpha band?), especially because previous evidence showed a poor correlation between predicted ES concentration calculated by the Schnider model and processed electroencephalogram–derived indices of consciousness.[8]

For a possible average patient (male, age 36, weight 70 kg, and height 170 cm), we simulated with Tivatrainer® software (Gutta BV, The Netherlands, software available for download at http://www.eurosiva.eu, accessed April 22, 2015) two possible ES TCIs of propofol according to the scheme reported by the authors, using the two more common pharmacokinetic models for ES control[3,4,9] (figs. 1 and 2). The concentrations calculated by these two models have different time courses with different total administered doses of propofol: during the experimental period of 14 × 5 min, the total dose administered by the Schnider model is 659 mg of propofol while the Modified Marsh Model administers a total dose of 742 mg of propofol, as a result of different infusion rates, which seem to us to be low to induce the characteristic spectrogram for propofol.

Thus, we consider that a full spectrogram as the one resulting from dexmedetomidine infusion would be valuable information for a better comprehension of the electroencephalographic changes resulting from a stepwise approach of propofol-induced LOC: especially for those who use TCI of propofol, it would be extremely useful to know at which calculated ES concentration by a particular pharmacokinetic model is expected to occur the through-max and peak-max changes.

Competing Interests

The authors declare no competing interests.

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(Accepted for publication April 2, 2015.)

In Reply:

We thank Drs. Saraiva and Lobo for their thoughtful analysis of our work. We point out that in our Anesthesiology article, Akeju *et al.*,[1] we took care to indicate that the propofol data came from a previous study, Purdon *et al.*,[2] in which we cited the classic paper by Schnider *et al.*[3] (see page 2, paragraph 2, of Purdon *et al.*[2]). In Purdon *et al.*,[2] we used the Schnider model to administer propofol at target effect-site concentrations from 0 through 5 μg/ml to subjects executing an auditory task at 4-s intervals. The probability of response to these sounds was used to identify in each subject time points for loss and recovery of consciousness, which were used to identify electroencephalogram signatures of propofol-induced unconsciousness and sedation.[2,4,5]

We analyzed the pharmacokinetic/pharmacodynamic (PK/PD) models used in target-controlled infusions and the electroencephalogram studies we have conducted over the past several years. As the authors suggested, we

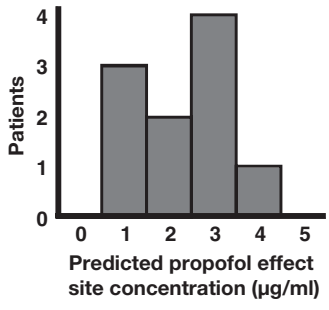

Fig. 1. Histogram of predicted propofol effect-site concentrations associated with loss of consciousness, from subjects studied in Purdon *et al.*[2] administered using the Schnider model.[3]