Intrathecal Sufentanil Produces Sensory Changes without Hypotension in Male Volunteers

To the Editor.—The article by Riley et al. regarding sensory changes after intrathecal sufentanil was well written, detailed, and informative. The authors stated that the basis for the neuroselectivity of the different stimulus frequencies used in the CPT evaluation performed by the Neurotron® CPT device (Neurotron, Inc., Baltimore, MD) was “theoretical and unsubstantiated.” Unfortunately, the authors must have been unaware of the significant number of peer-reviewed studies that have been published during the past 10 years, establishing the neuroselectivity of the CPT stimulator.1,2 These studies include, but are not limited to, comparison with other neurodiagnostic tests,3 peripheral nerve demonstrations of neuroselectivity,4 and spinal cord demonstrations of neuroselectivity.5 In fact, there have been more than 190 articles published in peer-reviewed journals using and validating the clinical use, reproducibility, and sensitivity of the CPT evaluation.

Apparently the only statistically significant change detected in CPTs before and after intrathecal administration of sufentanil was at 250 Hz at the knee. I agree with their point in the discussion section that there should have been a greater effect at 5 Hz. The reason for this discrepancy could be the way the data were analyzed. CPT values before and after intervention should always be expressed as a percent change as opposed to change in intensity (mA) because the amount of charge delivered is different for a 5-Hz versus 2,000-Hz sine wave stimulus. For instance, a 1-mA, 5-Hz sine wave stimulus delivers approximately 400 the charge (coulombs) as a 1-mA, 2,000-Hz sine wave stimulus. Therefore, a 10-CPT unit (100 µA) change at 5 Hz results in approximately 400 greater difference in charge delivery than a 10-CPT unit change at 2,000 Hz. Perhaps looking at the data as a percent change before and after sufentanil administration would reveal a significant effect at 5 Hz.

References


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References


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In Reply.—We appreciate Dr. Chado’s comments and interest in our article. We have reanalyzed the data as suggested by Dr. Chado. The ratio of pre- and posttreatment current perception threshold values were not significantly different (table 1). There was a trend for the 250- and 5-Hz lumbar groups to have a greater change posttreatment (as would be predicted), but the variability was too great to demonstrate this difference statistically. It is possible that a larger sample size or a crossover study design would have decreased the variability and demonstrated the predicted differences (we have considered both factors in subsequent studies). Another factor may be that the neurometer is not sensitive enough to measure the mild sensory changes effected by intrathecal opioids.

Finally, we agree with Dr. Chado that there is good evidence that the neurometer selectively stimulates various nerve fibers. However, to our knowledge, definitive patch clamp experiments have yet to be performed.

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Table 1. Ratio of Pretreatment and Posttreatment Current Perception Threshold Values

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<tr>
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<th>Cervical</th>
<th>Lumbar</th>
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<tbody>
<tr>
<td></td>
<td>2.000 Hz</td>
<td>250 Hz</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saline</td>
<td>1.1 ± 0.2</td>
<td>1.0 ± 0.3</td>
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<tr>
<td>Sufentanil</td>
<td>1.1 ± 0.3</td>
<td>1.3 ± 0.5</td>
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Valve System Performance

To the Editor.—I read the laboratory report, Testing the Competency of the Hemostasis Valve in Introducer Catheters published in Anesthesiology 1998; 88(5):1404–6, with great concern and alarm.

Arrow® strives to manufacture our hemostasis valves to the highest standards of performance. However, we think that it is important that practitioners not misread the results of this testing to infer that any manufacturers’ valve system is infallible. Another concern is that many practitioners refer to an introducer system and a hemostasis valve in

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