

Second, another risk factor is the level of administration of opiate (thoracic *vs.* lumbar), because the closer to the brain stem, the greater the chance of respiratory arrest. We have found that lumbar epidural opiates provide excellent analgesia, even for patients undergoing thoracotomy.

Finally, since supplemental parenteral opiates and sedatives increase the risk of respiratory depression, these drugs should be avoided as premedication and during surgery whenever possible.

Dr. Bromage cites a case report to illustrate that all intraspinal opiates are potentially dangerous.<sup>4</sup> Although few would argue this point, it is important to note that his patient received hydromorphone in a moderately large volume of saline given through a catheter inserted at a thoracic level. Furthermore, that patient received diazepam, morphine, and promethazine as premedication. Our clinical experience with over 1200 patients has been that, when those risk factors are minimized or eliminated, the continuous infusion or intermittent administration of hydromorphone through a lumbar epidural catheter has not resulted in a single case of apnea or respiratory arrest.

We agree with Ready and Chadwick<sup>2</sup> that, with appropriate nursing education, standard orders, hospital protocols, and medical supervision by anesthesiologists familiar with the actions and side effects, patients can be safely treated with epidural opiates outside Intensive Care Units on routine postsurgical wards.

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*In Reply:*—We are pleased to note that Dr. Brodsky and co-workers have found it safe to administer epidural opiates for postoperative analgesia outside the intensive care environment, and that, as in our experience, they find CO<sub>2</sub> retention in their patients is consistently associated with sedation.

However, we disagree with their statement that epidural morphine has no role when a catheter has been inserted. With appropriate precautions, morphine administered through an epidural catheter can be used safely outside an Intensive Care Unit. It is the most frequently used epidural narcotic in our institution and worldwide. Although it has been well established that the analgesic effect of epidural morphine may last 20–24 h in some patients, its duration of action is dose-related.<sup>1</sup> Our current practice is to administer smaller doses than those that have been used in the past. An indwelling epidural catheter facilitates the use of these smaller and safer doses of epidural morphine which, in some patients, are needed every 6 h to provide satisfactory analgesia.

It has not been established that more lipid-soluble opiates, such as fentanyl or hydromorphone, are safer than morphine for epidural use. We are now aware of unreported cases of severe respiratory depression following epidural fentanyl infusions. As noted by Brodsky and co-workers, epidural hydromorphone has also been reported to cause this complication.<sup>2</sup>

When an epidural catheter is inserted in the thoracic region to facilitate appropriate segmental block with local anesthetic for surgery involving the upper abdomen or thorax, morphine can safely be administered through the same catheter postoperatively. Reduction in morphine dosage in these patients compared with those with lumbar catheters results in effective and safe analgesia.

It should be emphasized that safety using epidural narcotics does not result primarily from selection of drugs with high lipid-solubility, or from restricting their use based on the site of epidural catheter placement. Rather, it results from a thorough understanding of the actions and side effects of the narcotics one chooses to use, and from

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#### REFERENCES

1. Bromage PR: A postoperative pain management service. *ANESTHESIOLOGY* 69:435, 1988
2. Ready LB, Chadwick HS: A postoperative pain management service. *ANESTHESIOLOGY* 69:436, 1988
3. Cousins MJ, Mather LE: Intrathecal and epidural administration of opioids. *ANESTHESIOLOGY* 61:276–310, 1984
4. Wust HJ, Bromage PR: Delayed respiratory arrest after epidural hydromorphone. *Anaesthesia* 42:404–406, 1987

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carefully planned and organized patient care such as we have described.<sup>3</sup> Brodsky and co-workers undoubtedly provide similar care with drugs that work well in their hands. Their excellent record of safety is more likely a consequence of that high quality of patient care rather than the drugs they have chosen to use.

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#### REFERENCES

1. Nordberg G: Pharmacokinetic aspects of spinal morphine analgesia. *Acta Anaesthesiol Scand (Suppl)* 79 28:1–38, 1984
2. Wust HJ, Bromage PR: Delayed respiratory arrest after epidural hydromorphone. *Anaesthesia* 42:404–406, 1987
3. Ready LB, Oden R, Chadwick HS, Benedetti C, Rooke GA, Caplan R, Wild LM: Development of an anesthesiology-based postoperative pain management service. *ANESTHESIOLOGY* 68:100–106, 1988

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