

with any greater benefit than might have been provided with 0.125% bupivacaine alone. Why subject this patient to a potential unnecessary risk?

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*In Reply*—In response to Drs. Ackerman and Juneja's question regarding the epidural administration of a low-dose bupivacaine/fentanyl solution in a parturient with severe primary pulmonary hypertension (PPH), we offer the following comments. Our aim with regard to the management of a parturient with PPH is to provide excellent analgesia without concomitant hemodynamic perturbation, as both pain and hemodynamic changes are poorly tolerated by these patients. Both of these goals were accomplished using the technique as described in the case report.<sup>1</sup> With these concerns in mind, we feel the risk of inadequate analgesia with low-dose bupivacaine without fentanyl greatly outweighs the slight risk of respiratory depression secondary to epidural bupivacaine with fentanyl; in other words, we feel the technique possesses a favorable risk:benefit ratio. Indeed, the risk of unrecognized respiratory depression in a patient who is postoperatively monitored in the ICU should be very remote. Furthermore, we are unaware of any case report of significant respiratory depression in a parturient following epidural fentanyl/local anesthetic for labor analgesia. Notwithstanding, Negre *et al.*<sup>2</sup> recently studied the ventilatory effects of epidural fentanyl in healthy males, and found no effect on respiratory rate, minute ventilation, or end-tidal CO<sub>2</sub>; however, the slope of the CO<sub>2</sub> response curve was less than control for up to 2 h post-injection. Therefore, these patients' reserve is probably less; and, consequently, they do require close monitoring of respiration at least for several hours.

Ackerman and Juneja suggest that 0.125% bupivacaine with 1:400,000 epinephrine as a continuous epidural infusion without fentanyl should provide adequate analgesia for most patients. We agree that epinephrine may act to enhance the effectiveness of local anesthetic solutions (by a mechanism that is not yet en-

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tirely known); however, we question the use of even small doses of epinephrine administered as a continuous epidural infusion to parturients with severe PPH. The hemodynamic manifestations of that technique are unknown in these patients, and, indeed, may be deleterious.

Data reported by several others, including some of the early work published on this subject,<sup>3</sup> suggest that when even a high concentration (*i.e.*, 0.5%) of bupivacaine is administered epidurally for labor, the addition of fentanyl results in a more rapid onset and more complete analgesia. We continue to use low-dose bupivacaine/fentanyl solutions for continuous analgesia for labor and delivery in parturients with severe cardiac disease. However, we wish to re-emphasize that invasive monitoring and slow titration of the low dose local anesthetic/narcotic solution is required for epidural analgesia in these patients.

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