

Anesthesiology
2000; 92:622
© 2000 American Society of Anesthesiologists, Inc.
Lippincott Williams & Wilkins, Inc.

Spinal Anesthesia in Preeclamptic Patients— “Supportive” Evidence

To the Editor:—I congratulate Hood and Curry¹ for attempting to provide outcome-based evidence “supporting” the routine use of spinal anesthesia in severely preeclamptic patients. I agree, the evidence is supportive, but not “convincing.” Hood and Curry¹ and Santos² appropriately discuss the weaknesses and applicability of the data from a retrospective study. I would like to discuss three points.

First, there were no guidelines as to induction of epidural anesthesia, specifically (1) volume of local anesthetic injected; (2) time course for dosing; and (3) physiologic end point (e.g., sensory dermatome). Is injecting up to a “10 ml bolus” of epidural local anesthetic, especially 3% 2-chloroprocaine, analogous to inducing spinal anesthesia? If yes, then why should there be a difference in outcome between spinal and epidural anesthesia?

Second, Hood and Curry¹ theorize greater levels of pain-induced circulating catecholamines in laboring as compared with nonlaboring patients. With induction of spinal anesthesia, secretion of circulating catecholamines is suddenly attenuated, leading to maternal hypotension greater than what is seen in nonlaboring patients.³ If this is so, then why are baseline maternal blood pressures similar between laboring and nonlaboring patients?^{1,3} Does blood pressure decrease less after induction of regional anesthesia in laboring patients than in nonlaboring patients?^{4,5}

Third, why were only 65% of severely preeclamptic patients receiving magnesium sulfate therapy? Magnesium sulfate therapy causes (1) vasodilation of uterine and systemic arterial vasculature^{6,7}; (2) worsens hypotension seen with hemorrhage⁸ (e.g., at delivery) and induction of epidural anesthesia⁹; and (3) attenuates the effects of catecholamines, including angiotensin II, on systemic and uterine vasculature.¹⁰ Could magnesium sulfate influence the degree of maternal hypotension and volume of hydration and dose of ephedrine infused in response to the more rapid onset of sympathectomy accompanying spinal anesthesia? What was the magnitude of the decrease in blood pressure in the patients who received magnesium sulfate *versus* those who did not receive this drug? Are the results of the study by Hood and Curry¹ applicable to my preeclamptic patients who are uniformly (*versus* 65% of the time) treated with magnesium sulfate?

It is commonly accepted that regional anesthesia is “safer” than general anesthesia in a severely preeclamptic patient.² In the authors’ superb care, spinal anesthesia probably is as “safe” for the mother as epidural anesthesia. However, the other product of our endeavors is neonatal outcome; to that end, I am encouraged by their neonatal outcome data. As the authors imply, there are still practitioners who believe that even aggressively treated episodes of maternal hypotension may be detrimental to a relatively “ischemic” (especially in a preterm), fetoplacental unit. I must admit that I should be counted among this dwindling number! I still await a prospective analysis to

“convince” me that spinal anesthesia and epidural anesthesia are equal and interchangeable techniques in severely preeclamptic patients.

Andrew M. Malinow, M.D.
Department of Anesthesiology
University of Maryland School of Medicine
Baltimore, Maryland 21201
amalinow@anesthesia.ummc.umaryland.edu

References

- Hood D, Curry R: Spinal versus epidural anesthesia for cesarean section in severely preeclamptic patients. *ANESTHESIOLOGY* 1999; 90:1276–82
- Santos AC: Spinal anesthesia in severely preeclamptic women: When is it safe? *ANESTHESIOLOGY* 1999; 90:1252–4
- Wallace DH, Leveno KJ, Cunningham FG, Giesecke AH, Shearer VE, Sidawi JE: Randomized comparison of general and regional anesthesia for cesarean delivery in pregnancies complicated by severe preeclampsia. *Obstet Gynecol* 1995; 86:193–9
- Clark RB, Thompson DS, Thompson CH: Prevention of spinal hypotension associated with cesarean section. *ANESTHESIOLOGY* 1976; 45:670–4
- Brizgys RV, Dailey PA, Shnider SM, Kotelko DM, Levenson G: The incidence and neonatal effects of maternal hypotension during epidural anesthesia for cesarean section. *ANESTHESIOLOGY* 1987; 67:782–6
- Cotton DB, Gonik B, Dorman KR: Cardiovascular alterations in severe pregnancy-induced hypertension: Acute effects of intravenous magnesium sulfate. *Am J Obstet Gynecol* 1984; 148:162–5
- Scardo JA, Hogg BB, Newman RB: Favorable hemodynamic effects of magnesium sulfate in preeclampsia. *J Obstet Gynecol* 1995; 173:1249–53
- Chestnut DH, Thompson CS, McLaughlin GL, Weiner CP: Does the intravenous infusion of ritodrine or magnesium sulfate alter the hemodynamic response to hemorrhage in gravid ewes? *Am J Obstet Gynecol* 1988; 159:1467–73
- Vincent RD Jr, Chestnut DH, Sipes SL, Weiner CP, DeBruyn CS, Bleuer SA: Magnesium sulfate decreases blood pressure but not uterine blood flow during epidural anesthesia in gravid ewes. *ANESTHESIOLOGY* 1991; 74:77–82
- Sipes SL, Chestnut DH, Vincent RD Jr, Weiner CP, Thompson CS, Chatterjee P: Does magnesium alter the maternal cardiovascular response to vasopressor agents in gravid ewes? *ANESTHESIOLOGY* 1991; 75:1010–8

(Accepted for publication September 3, 1999.)