

THERAPEUTICS

Review: Epidural or spinal anesthesia reduces postoperative mortality and morbidity

Rodgers A, Walker N, Schug S, et al. Reduction of postoperative mortality and morbidity with epidural or spinal anaesthesia: results from overview of randomised trials. *BMJ*. 2000 Dec 16; 321:1493-7.

QUESTION

What is the effect of epidural or spinal anesthesia on postoperative mortality and morbidity?

DATA SOURCES

Studies were identified by searching MEDLINE (1966 to 1996), *Current Contents* (1995 to 1996), EMBASE/Excerpta Medica (1980 to 1996), and the Cochrane Library (1998) with terms that include regional anaesthesia, regional anesthesia, spinal, and epidural. In addition, conference proceedings were hand searched, bibliographies of relevant papers were scanned, and authors were contacted.

STUDY SELECTION

Studies were selected if they were randomized trials of epidural or spinal anesthesia compared with general anesthesia and if data were available before 1 January 1997.

DATA EXTRACTION

Data were extracted on study characteristics, including type of surgery, patient numbers, type of neuraxial blockade used, and outcomes.

MAIN RESULTS

158 studies were identified, and 141 studies (9559 patients, 4871 who received epidural or spinal anesthesia and 4688 who did not) met the selection criteria. Studies represented various surgical groups: general surgery ($n = 28$), orthopedics ($n = 44$), urology ($n = 18$), vascular ($n = 22$), and other ($n = 29$). 247 deaths that occurred within 30 days of randomization were reported in 35 trials. Epidural or spinal anesthesia reduced overall 30-day mortality, deep venous thrombosis, pulmonary embolism, perioperative and postoperative bleeding requiring transfusion, and pneumonia (Table). No difference existed for the effect of epidural or spinal anesthesia on mortality among

different surgical groups, between spinal and epidural anesthesia on mortality, or between trials of spinal or epidural anesthesia plus general anesthesia and trials of spinal or epidural anesthesia alone.

CONCLUSION

Epidural or spinal anaesthesia reduces postoperative mortality, deep venous thrombosis, pulmonary embolism, bleeding, and pneumonia.

Sources of funding: Health Research Council of New Zealand and Astra Pain, New Zealand.

For correspondence: Dr. A. Rodgers, Clinical Trials Research Unit, Department of Medicine, University of Auckland, Private Bag 92019, Auckland, New Zealand. FAX 64-9-373 1710. ■

Neuraxial blockade vs no neuraxial blockade on mortality and morbidity at 30 days*

Outcomes	Weighted event rates		RRR (95% CI)	NNT (CI)
	Blockade	No blockade		
Mortality	2%	3%	31% (12 to 46)	104 (62 to 310)
Deep venous thrombosis	3%	5%	37% (22 to 48)	58 (40 to 105)
Pulmonary embolism	0.6%	1.4%	56% (33 to 71)	126 (82 to 251)
Perioperative transfusion	4%	6%	34% (21 to 45)	50 (35 to 87)
Postoperative transfusion	0.6%	1.5%	57% (34 to 72)	120 (79 to 230)
Pneumonia	3%	5%	40% (26 to 51)	50 (35 to 81)

*Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

COMMENTARY

The systematic review by Rodgers and colleagues provides evidence from randomized trials that regional anesthesia is associated with reduced mortality and morbidity in patients having surgery. The study was well done, and the authors tried to evaluate the potential of bias on the results.

Nonetheless, when evaluating the results, several points should be considered. First, the test of heterogeneity was not statistically significant, which shows that the results did not differ systematically among subgroups. However, the 95% CI for the effect of neuraxial blockade on mortality, although favoring neuraxial blockade, crossed the value of 1 for all surgical types except orthopedic patients. Whether these subgroup results are caused by insufficient power from a limited sample size or by a true lack of treatment effect is unclear. Second, of the included studies, 87 of 107 (81%) had ≤ 50 patients, which raises concerns about study quality. Third, 51 of 107 studies (48%) were published before 1986, and 99 of 107 studies (93%) were published

before 1991, when mortality from general anesthesia was higher and prophylaxis for deep venous thrombosis was infrequently used. How these temporal changes may influence the findings is unclear.

How then do we advise patients about which type of anesthesia to use? As always, we must balance the risks and benefits. This review provides evidence for improved survival and reduced complications in patients receiving neuraxial blockade without evidence of harm. Anesthesiologists should discuss these findings with patients when considering the type of anesthesia. Further research is needed to evaluate whether these findings hold true with current anesthetic practice and to provide more precise estimates of the effect of neuraxial blockade in different types of surgery. Meanwhile, the evidence supports the use of neuraxial blockade when possible.

*Peter J. Pronovost, MD, PhD
Johns Hopkins University
Baltimore, Maryland, USA*