

Epidural anesthesia and analgesia did not reduce most comorbid outcomes in high-risk patients having major abdominal surgery

Rigg JR, Jamrozik K, Myles PS, et al., for the MASTER Anaesthesia Trial Study Group. Epidural anaesthesia and analgesia and outcome of major surgery: a randomised trial. *Lancet*. 2002 Apr 13;359:1276-82.

QUESTION

In high-risk patients having major abdominal surgery, is intraoperative epidural anesthesia and postoperative epidural analgesia combined with general anesthesia effective?

DESIGN

Randomized (allocation concealed*), unblinded,* controlled trial with 30-day follow-up.

SETTING

25 hospitals in 6 countries.

PATIENTS

920 patients having major abdominal surgery or esophagectomy with 1 of 9 comorbid conditions (obesity, diabetes mellitus, chronic renal failure, respiratory insufficiency, major hepatocellular disease, cardiac failure, acute myocardial infarction, or myocardial ischemia or age \geq 75 y plus 2 risk factors). Exclusion criteria were age < 18 years, surgery within 12 hours of hospital admission, or contraindications to the use of epidural block. 888 patients (97%) were included in the analysis.

INTERVENTION

464 patients were allocated to intraoperative epidural anesthesia and postoperative epidural analgesia for 72 hours with general anes-

thesia (site of epidural selected to provide optimum block), and 456 were allocated to general anesthesia only.

MAIN OUTCOME MEASURES

The primary end point was death or major morbidity 30 days after surgery. Secondary end points were pain and adverse effects.

MAIN RESULTS

Analysis was by intention to treat. The groups did not differ for the primary end point, mortality at 30 days (Table) or 7 of 8 major morbidities. The study had 80% power to detect an absolute difference of 10% in the primary end point with a 2-tailed α of 0.05. Respiratory failure (1 of the 8 major morbidities) occurred less frequently in

patients managed with epidural techniques (Table). Postoperative epidural analgesia was associated with lower pain scores during the first 3 days after surgery.

CONCLUSION

In high-risk patients having major abdominal surgery, combined epidural anesthesia and analgesia did not reduce most morbid outcomes more than general anesthesia alone.

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*See Glossary.

Intraoperative epidural anesthesia and postoperative epidural analgesia with general anesthesia (epidural) vs general anesthesia alone (control) in high-risk abdominal surgery†

Outcomes	Epidural	Control	RRR (95% CI)	NNT (CI)
Primary end point	57%	61%	6% (-5 to 16)	Not significant
Respiratory failure	23%	30%	23% (4 to 38)	15 (9 to 94)
			RRI (CI)	NNH
30-day mortality	5.2%	4.3%	19% (-33 to 114)	Not significant

†Primary end point = death or major morbidity 30 days after surgery. Other abbreviations defined in Glossary; RRR, RRI, NNT, NNH, and CI calculated from data in article.

COMMENTARY

The results of the study by Riggs and colleagues are not all bad news! Patients in the epidural group had a 7% absolute risk reduction for respiratory failure, a clinically significant result. Lawrence has described postoperative pulmonary complications as a “sleeping giant” (i.e., an underappreciated source of morbidity and cost) (1). Epidural blockade can reduce such complications (2). The epidural group in the study by Riggs and colleagues also had less postoperative pain, an important goal in itself.

The study was unblinded, but mostly objective outcome measures were used to reduce bias (3). The study may also have been underpowered to detect differences in 30-day mortality or other morbidities; only 225 patients in the epidural group were fully compliant with the protocol. A recent meta-analysis required 3617 orthopedic patients to show reduced mortality with neuraxial anesthesia (4).

In the study by Riggs and colleagues of high-risk patients, overall mortality was an impressive 5%. The use of combined general and epidural anesthesia has developed concurrently with improvements in preoperative assessment and perioperative management. Other measures (e.g., β -blockade) may have more effect on outcome than epidural blockade.

Deep venous thrombosis prophylaxis is not a contraindication to neuraxial anesthesia. The exception is the use of low-molecular-weight heparin, where several cases of spinal hematoma and paraplegia have occurred.

Given the benefits and extremely low risk, we should consider a thoracic epidural block combined with general anesthesia for major abdominal surgery.

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References

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