Perioperative epidurals: the controversy goes on

Epidural insertion is one of the commonest procedures performed by anaesthetists worldwide; in the UK alone, an estimated 100 000 perioperative epidurals are inserted every year. This article reviews the current evidence for and against perioperative epidural use, focusing particularly on its role in reducing major morbidity and mortality.

Evidence supporting epidural use

The superior pain relief gained from continuous epidural analgesia compared to systemic opioids is now well established. In a Cochrane review (Werawatganon and Charuluxananan, 2009), a mean difference in visual analogue scale of 1.7 (10-point scale, 95% confidence interval = 1.3–2.19) favouring epidurals over systemic opioids was found for patients undergoing intra-abdominal surgery. This benefit is seen for up to 72 hours postoperatively and has been confirmed in nearly all types of surgery (Cook et al, 2009).

There is evidence that perioperative epidurals may be associated with lower cardiovascular, respiratory, gastrointestinal and haematological complication rates. Fewer ventilator days in intensive care, earlier return of gastrointestinal function, and reductions in pneumonia, blood loss and incidence of thromboembolism have all been confirmed in systematic reviews and meta-analyses (Liu and Wu, 2007). It appears that these benefits occur primarily in high-risk patients undergoing high-risk surgery, and that thoracic (as opposed to lumbar) epidurals confer the optimum degree of protection.

Evidence against epidural use

The potential of epidurals to reduce mortality from major surgery is not as clear-cut. The two largest randomized controlled trials to date to look at mortality rates with epidurals are the MASTER trial (Rigg et al, 2002) and the Veterans Affairs Cooperative Study (VACS) (Park et al, 2001).

The MASTER trial looked at 915 high-risk patients undergoing abdominal procedures. Patients were randomized to receive combined general or epidural anaesthesia followed by 72 hours of epidural analgesia with local anaesthetic and opioid, or general anaesthesia followed by systemic opioid treatment. There was no difference in mortality between the two groups, although there was a reduction in respiratory complications in the epidural group. The study has been criticized as it was underpowered to detect a difference in the primary end point – mortality. Additionally, there was a very high drop-out rate in the epidural group (over 40%).

The VACS study of 984 patients undergoing abdominal surgery also found no mortality benefit from epidural analgesia. This differed from the MASTER trial in that epidural morphine was used postoperatively in the treatment arm as opposed to local anaesthetic; however, again, site of epidural insertion was not specified.

There have been further studies looking at this topic, although most suffer from similar flaws relating to methodology and sample size. As a result, a number of meta-analyses have been published to collate the available evidence. The largest of these by Rodgers et al (2000), which included 141 randomized controlled trials and 9559 patients, found a significant reduction in mortality with neuraxial blockade (1.9% *vs* 2.8%, odds ratio 0.7, P=0.006). However, following subgroup analysis, this reduction was only apparent in orthopaedic patients, and only in those who had thoracic epidural analgesia. Another large cohort study (Wijeysundera et al, 2008) found a very modest reduction in mortality in patients who received epidural anaesthesia (number needed to treat to save one life = 447).

When looking at arguments against epidural insertion it is important to briefly mention the risks involved. The safety profile of epidural insertion was assessed in the Royal College of Anaesthetists' 3rd National Audit Project (Cook et al, 2009). It concluded that the incidence of permanent nerve damage from central neuraxial blockade ranged between 1:24 000 and 1:54 000, and of paraplegia or death was between 1:50 000 and 1:140 000. Perhaps significantly, 80% of these complications occurred with perioperative epidurals.

Conclusions

Epidural analgesia provides optimal pain relief following major operations and there is some evidence that in certain patients it reduces postoperative morbidity. Failure rates for epidural analgesia, the impact that this has on perioperative outcomes, and optimal strategies to prevent failure are poorly discussed in the literature, and there remains equipoise over which pharmaceutical agents should be used in neuraxial blocks. It may be that future studies reporting patient-focussed outcomes, such as satisfaction and time to recovery, would help resolve these uncertainties. **BJHM**

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