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Epidural anaesthesia and analgesia: better outcome after major surgery?

Growing evidence suggests so

Major surgery induces profound physiological changes in the perioperative period, characterised by increases in sympathoadrenal and other neuroendocrine activity and also increased cytokine production. Because epidural anaesthesia can attenuate this "stress response" to surgery, improve the quality of postoperative analgesia in comparison with systemic opioids, and hasten recovery of gut function, it has been suggested that conducting surgery under epidural anaesthesia (either as the sole anaesthetic or in combination with general anaesthesia) may reduce perioperative morbidity and mortality compared with general anaesthesia alone.[1]

Indeed, in a study of high risk patients undergoing major vascular surgery those who received combined general and epidural anaesthesia with postoperative epidural analgesia had significantly lower cardiac morbidity than those receiving general anaesthesia alone with postoperative systemic opioid analgesia.[2] Unfortunately, subsequent studies have failed to confirm this finding. This uncertainty probably relates to the design, small size, and inadequate number of relevant studies for a meta-analysis of outcome; hence investigators in Australia are currently undertaking a large, multicentre study to address this question.

Though the effects of epidural anaesthesia on mortality and cardiac morbidity have been disappointing so far, the evidence that epidural anaesthesia decreases thromboembolic, pulmonary, and gastrointestinal postoperative complications is much more encouraging. A meta-analysis showed a significant reduction in venous thromboembolism in patients undergoing surgery for hip fracture under regional (epidural or spinal) anaesthesia compared with general anaesthesia, but showed only a marginally better effect on early mortality.[3] Another meta-analysis of randomised controlled trials on the influence of different anaesthetic and postoperative analgesic regimens on pulmonary outcome found that thoracic epidural anaesthesia and analgesia using opioids and local anaesthetics was associated with a decreased incidence of atelectasis, pulmonary infections, and hypoxaemia compared with systemic opioids.[4] Perhaps surprisingly, there were no differences in physiological lung volumes. The mechanism by which thoracic epidural anaesthesia improves pulmonary morbidity is unclear but may be related to improved analgesia and alertness, allowing patients to sigh, cough, and change position more easily. Diaphragmatic dysfunction, a consequence of reflex muscle spasm after surgery, may also be attenuated by thoracic epidural anaesthesia, hence improving pulmonary function.[5]

It is in gastrointestinal surgery, however, that epidurals have most often shown favourable effects on outcome. Postoperative ileus is a ubiquitous complication after major abdominal surgery, inhibiting gut motility for up to 72 hours and prolonging admission. In a randomised trial patients undergoing major abdominal surgery using combined general and thoracic epidural anaesthesia had earlier recovery of gut function than those receiving general anaesthesia alone followed by standard systemic opioid analgesia.[6] Optimum results are achieved when the epidural regimen combines local anaesthetics and opioids, as sole use of epidural morphine may delay recovery of gut motility and cause pruritus and nausea.[6 7] The mechanism of its apparent efficacy could be due to segmental block of dermatomes T5-T12, antagonising sympathetically mediated peristaltic inhibition while preserving vagal and sacral parasympathetic outflow.

As postoperative pain may be a potent cause of adverse events in many organ systems,[8] the improved postoperative analgesia afforded by continuing epidural analgesia has prompted investigations on whether it facilitates resumption of oral nutrition, mobilisation, and earlier discharge from hospital or intensive care units. Improved patient activity at 3.5 weeks and less pain enduring to 9.5 weeks after operation have been shown in a prospective, double blind study of patients undergoing radical prostatectomy with pre-emptive epidural anaesthesia.[9] Another retrospective investigation in patients undergoing oesophagectomy showed that those who received intraoperative and postoperative thoracic epidural anaesthesia, early tracheal extubation, and intensive physiotherapy were mobilised and discharged from intensive care more rapidly than those receiving conventional management.[10]

Though these reports are promising, translating improvements in physiological variables achieved by epidurals into significantly better postoperative clinical outcomes may be difficult and may be confounded by cultural or psychological factors. Patients undergoing major surgery may expect to stay in hospital for 7-10

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days, necessitating that carers in these outcome studies should be blind to such factors as whether conventional or laparoscopic surgery was conducted.[11] Indeed, the combination of epidurals, laparoscopic surgery, and a multimodal approach to aggressive postoperative rehabilitation may dramatically reduce hospital stay, as shown in nine elderly patients who stayed in hospital for only two to three days after colonic surgery, compared with the normal 10 days.[12] This was, however, an open investigation, and larger studies, necessary for proper evaluation of this multimodal approach, have not yet materialised.

Consideration of these studies raises the question of the adequacy of current outcome variables for evaluating recovery. Modern anaesthetic practice is inherently safe and differences in mortality between techniques may be difficult to detect, even in high-risk patients. Thus future postoperative outcome studies may need to focus on patients' own views of recovery, including their assessment of their overall well being and return to preoperative energy and activity levels.

Despite the evidence that use of epidural anaesthesia is associated with some improvements in postoperative outcome, it carries the risk of serious neurological complications. These are rare, but vigilance in the postoperative period is required to detect the triad of back pain, progressive motor weakness, and incontinence which may herald an epidural haematoma or abscess. Modern practice using dilute concentrations of local anaesthetics or opioids in epidural infusions (thereby reducing motor weakness) is helpful in aiding diagnosis of this potentially devastating complication. If suspected, immediate radiological investigation (with magnetic resonance imaging) and surgery are required to relieve spinal cord compression.

Thus, the balance of available evidence in the form of relatively few randomised trials and meta-analyses suggests that epidural anaesthesia and postoperative analgesia may facilitate earlier recovery and improved outcome by reducing the incidence of thromboembolic, pulmonary, and gastrointestinal complications after major surgery. A multidisciplinary approach to rehabilitation may help to capitalise on this improved postoperative physiological state, but further prospective evaluation is warranted.

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Hereditary haemochromatosis: to screen or not

Conditions for screening are not yet fulfilled

During the past several years hereditary haemochromatosis has risen from relative obscurity to become a topic of intense interest in the health community. Traditionally, hereditary haemochromatosis has been viewed as a rare inherited disorder, primarily of older men, that presents with life threatening complications such as "bronzed diabetes" (skin pigmentation, diabetes, and cirrhosis), primary liver cancer, or heart failure. Knowledge gained in the past 30 years, however, has shown that hereditary haemochromatosis occurs in as many as 5 in every 1000 white people of northern European heritage.[1] The classic "bronzed diabetes" presentation is actually rare because it represents only a small proportion of affected individuals, usually those in whom the diagnosis has been missed for many years.[2] This disorder more often presents in both men and women with non-specific medical complaints, such as abdominal pain, fatigue, sexual dysfunction, or joint pain, and hereditary haemochromatosis is often overlooked as a potential explanation.[1 2] As iron loading progresses many organs and tissues can be damaged, leading to hepatic fibrosis and cirrhosis, primary liver cancer, endocrine dysfunction, cardiomyopathy, or arthropathy.[1 2]

For over 10 years laboratory tests for assessing iron burden (transferrin saturation, serum ferritin) have been widely used in population screening, in conjunction with diagnostic protocols aimed at differentiating hereditary haemochromatosis from other acquired and inherited causes of iron overload. These trials identified 2-5 in 1000 people as having biochemical evidence of iron overload.[3] In 1996 a candidate gene for hereditary haemochromatosis, designated *HFE*, and two mutations (C282Y and H63D) were discovered.[4] In most white populations of northern European heritage about 85% of people with clinically diagnosed hereditary haemochromatosis are homozygous for the C282Y mutation.[5] The homozygous

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