ORIGINAL RESEARCH PAPER

Volume-7 | Issue-4 | April-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

EPIDURAL ANESTHESIA, AN OLDER TECHNIQUE WITH NEWER ADVANTAGES.

Anaesthesiology

Dr Chetan Shukla* Professor, Department of Anesthesiology and Critical Care, Government Medical College, Kota, Rajasthan

Dr Anubhav Sharma Senior Resident, Department of Anesthesiology and Critical care, Government Medical College, Kota, Rajasthan *Corresponding Author

ABSTRACT

Epidural anesthesia and analgesia is widely used to manage major abdominal surgery intraoperative as well as postoperative analgesia, but its risks and benefits are uncertain. High risk surgeries are associated with high morbidity and mortality especially in patients with pulmonary dysfunction, hepatic or renal dysfunctions, advancing age and in case of morbid obesity patients. Thoracic epidural analgesia and anesthesia is associated with decreased morbidity in these patients. Thoracic epidural is associated with haemodynamic stability, good pulmonary function, decreased catecholamine response and early extubation and discharge from intensive care unit. It is an important component of fast tracking in high risk cardiac patients. Its use has significantly increased over the past few years and has been used as an adjuvant to general anaesthesia as well as the sole technique in selected groups of patients. Proper selection of patients for thoracic epidural epidural is mandatory. Timing of epidural catheter insertion and removal should be judiciously selected. In conclusion epidural analgesia as anesthesia in high risk surgery might decrease pulmonary and cardiovascular or renal complications, provide excellent analgesia and allow fast track early extubation and hence lower mortality and morbidity.

KEYWORDS

Anesthesia , Epidural

Introduction:

Perioperative epidural analgesia influence on outcome after major abdominal surgery has been a source of controversy. A meta-analysis of randomized, controlled trials (RCTs) found that, neuraxial block was associated with significantly decreased perioperative morbidity and mortality when compared to other analgesia techniques. However, there was no significant difference between groups when the analysis was restricted to non-orthopedic surgery, nor when neuraxial block was combined with general anesthesia.1 Study done by Ballantyne et al. found a significant reduction in the incidence of pulmonary infection where epidural local analgesia was used.2 Beattie et al. conducted a meta-analysis of RCTs looking at cardiac outcome and showed a significant reduction in the rate of postoperative myocardial infarction with epidural analgesia.[3]

Systemic opioids used during surgeries have its different side effects and fear of respiratory depression is common. Recently, use of epidural infusion with local anesthetics with adjutants has emerged to improve analgesia in high-risk patients. With every intervention, risk of benefits must be weighed against the potential for a desired outcome. Inadequate or patchy analgesia, nerve or spinal cord injury, inadvertent subarachnoid injection, local infection, epidural abscess, respiratory arrest, and spinal cord compression from epidural hematoma are possible complications from epidural analgesia. Most of these are very rare, reversible, or insignificant. Spinal cord compression from a hematoma or abscess is frequently not reversible. Patients on systemic anticoagulation are presumed to have an increase in the incidence of developing an epidural hematoma related to the epidural catheter; however, there is little evidence to measure the magnitude of this increased risk. In fact, there are no published reports of epidural hematomas complicating epidural analgesia in patients following cardiac surgery after cardiopulmonary bypass and on systemic anticoagulation, so the risk of same is very minimal in cardiac patients undergoing non cardiac surgeries. Patient selection is the key to reduce such complication. Sanchez and Nygard reported 558 cardiac surgery patients who had epidural catheters placed following strict guidelines, which included performing the procedure the day prior to surgery, obtaining an initial normal coagulation profile, carefully screening preoperative drug use, and limiting the attempts to two tries.4 There were no epidural hematomas reported in this study.

There are many other advantages of epidural analgesia and therapeutic role in patients with unstable angina has been reported in multiple studies5,6 and has been shown to be beneficial role in increasing coronary perfusion. Special benefits have been shown to patients with ischemic pain unresponsive to conventional treatment measures who are not surgical candidates. In these patients who are taking active anticoagulants, Catheter location is one choice. There are less chances of permanent neurologic damage if a hematoma is formed in the lumbar area. Lumbar or thoracic epidural analgesia can be achieved with narcotics alone or by using continuous infusions. Brodsky et al7 reported that in thoracotomy patients continuous infusion of hydromorphone provided excellent pain relief following surgery.

After tissue injury such as during surgery, our bodies respond through a complex neurohumoral response, the aim of which is survival from the acute injury and the repair of tissue damage. However, in the perioperative patient, components of the stress response can cause major postoperative complications and may be detrimental. Special consideration should be taken and this is more significant in patients who are elderly or who have major co-morbidities. Surges of catecholamines result in increasing workload for the heart, and consequent increasing myocardial oxygen requirements. An oxygen supply–demand mismatch in patients with underlying disease such as coronary disease can lead to myocardial ischaemia or infarction, life threatening arrhythmias, and cardiac failure.

Blocking of afferent neural input from the site of surgery with epidural analgesia has a beneficial effect in reducing these neurohormonal aspects of the surgical stress. Reducing the neuro-hormonal input to the postoperative stress response with epidural analgesia can also improve nitrogen balance, fatigue, and postoperative mobility. Other infectious complications can be reduced by keeping patients normoglycaemic and avoidance of immunosupression.8 The beneficial effects of effective epidural analgesia on respiratory function and complications after abdominal surgery are well established. There is a reduced chance of thromboembolic complications which has been shown in many studies specially in orthopaedic literature.

In case of Abdominal surgery where handling of the gut predisposes patients to developing the unpleasant and potentially life-threatening complication of paralytic ileus. Other factors like Surgical handling, causing bowel oedema due to excessive intravenous fluids, increased sympathetic tone, and systemic opioids can all contribute to intestinal hypo-motility and hence ileus. In open abdominal surgery, less chances of postoperative ileus has been shown in patients where thoracic epidural has been used.This is due both to the sympathetic block produced by epidural local anaesthetic and also by the avoidance of systemic opioids. But the chances of hypothesion is always a concern. And hence use of excessive i.v fluids and development of gut oedema may also be a factor in anastomotic breakdown and leak. Thus is therefore essential that individual units have a policy to effectively manage epidural-related hypotension, so that excessive intravenous fluids are not administered beyond requirement for optimal euvolumic state.

With the advancement of surgeries and a growing elderly population presenting for major surgery, the risks for and avoidance of postoperative cognitive dysfunction (POCD) has become increasingly important. POCD has been shown to be associated with increased hospital length of stay, persistent cognitive defects, increasing physical dependence, and an increased rate of admission to hospitals. Recent research has shown that the risk of POCD can be reduced by reduction in the exposure to general anaesthetic agents.[9]

Immunomodulating effects have been shown to be an effect of anaesthetic and analgesic agents. It is clearly important that in the context of increasing numbers of operations to treat cancer, the effect of this is investigated to facilitate the optimal choice of perioperative anaesthesia and analgesia. A number of retrospective studies have suggested that when regional anesthesia and analgesia is used there is an improvement in disease-free survival time. It is hypothesized that the reduced stress response occurring with a regional technique results in less postoperative immunocompromise with reduced potential for the spread of micrometastases at the time of surgery especially in cancer surgeries. Alternatively, the benefit may be in avoiding systemic opioid therapy, since it is well established that opioids inhibit the activity of natural killer cells and other cell-mediated immunity in vitro and could have a similar effect in vivo hence favouring spread of metastatic cells but few more studies are required to validate the same.

Conclusion:

High-risk patients with significant cardio respiratory co-morbidity, or extreme age, undoubtedly benefit from the quality of analgesia provided by an effective epidural and are more likely to benefit from associated early mobilization and nutrition. Epidural analgesia can reduce pulmonary, cardiovascular, thromboembolic, and gastrointestinal complications occurring after abdominal surgery and hence epidural analgesia should remain an integral part of our analgesic regimen for use in selected patients and also allow fast track early extubation and hence lower mortality and morbidity in clinical practice.

Refrences:

1. Rodgers A, Walker N, Schug S, et al. Reduction of postoperative mortality and morbidity with epidural or spinal anesthesia: results from overview of randomized trials. BMJ 2000;321:1493–7.
2. Ballantyne J, Carr D, deFerranti S, et al. The comparative effects of postoperative analgesic therapies on pulmonary outcome: cumulative meta-analyses of randomized, controlled trials. Anesth Analg 1998;86:598–612.
3. Beattie W, Badner N, Choi P. Epidural analgesia reduces postoperative myocardial infarction: a meta-analysis. Anesth Analg 2001;93:853–8
4. Sanchez, R and Nygard, E. Epidural anesthesia in cardiac surgery: is there an increased risk?. J Cardiothorac Vasc Anesth. 1998; 12: 120–123
5. Kleinman, B. Con: thoracic epidural anesthesia is not indicated in the treatment of unstable angina. J Cardiothorac Vasc Anesth. 1997; 11: 109–111
6. Toft, P and Jorgensen, A. Continuous thoracic epidural analgesia for the control of pain in myocardial infarction. Intensive Care Med. 1987; 13: 388–389
7. Brodsky, JB, Chaplan, SR, Brose, WG et al. Continuous epidural hydromorphone for postthoracotomy pain relief. Ann Thorac Surg. 1990; 50: 888–893.
8. Susan M Nimmo, Lorraine S Harrington; What is the role of epidural analgesia in abdominal surgery?, Continuing Education in Anaesthesia Critical Care & Pain, Volume 14, Issue 5, 1 October 2014, Pages 224–229.
9. Chan MT, Cheng BC, Lee TM, Gin T. CODA Trial Group BIS-guided anesthesia decreases postoperative delirium and cognitive decline, J Neurosurg Anesthesiol ,2013,vol. 25 (pg.33- 42)