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RESEARCH ARTICLE

ROLE OF PREOPERATIVE EPIDURAL ANALGESIA IN POSTOPERATIVE OUTCOME OF PATIENTS WITH CHRONIC LIMB ISCHEMIA AND REST PAIN

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Abstract

Introduction: Rest pain in patients with chronic limb ischemia is very severe and intolerable one, hence it is often quoted as 'cry of dying nerves'. All these patients require highly effective analgesia for control of pain. Epidural analgesia is known for its effective analgesic property. Its role in post operative period is well documented and known. But its role in preoperative period for these patients is poorly understood. Here we analyze role of preoperative epidural analgesia in postoperative outcome of patients with chronic limb ischemia and rest pain.

Material and Methods: It is a prospective study done in 40 patients which analyze role of preoperative epidural analgesia in postoperative outcome of patients with chronic limb ischemia and rest pain who are undergoing bypass revascularization procedures. Here 20 patients each separated in two groups, group 1 – those received preoperative epidural analgesia for 48 hours prior to surgery and group 2 those who not received preoperative epidural analgesia.

Results: It was found postoperative wound infections, limb salvage rates and adverse myocardial events were lower in group 1 patients those received preoperative epidural analgesia.

Conclusion: Hence preoperative epidural analgesia has beneficial role in postoperative outcome of patients with chronic limb ischemia and rest pain.

Introduction:-

Rest pain in patients with chronic limb ischemia is a very severe and intolerable one, hence it is often quoted as 'cry of dying nerves'. All these patients require highly effective analgesia for control of pain. Epidural analgesia is known for its effective analgesic property. A major advantage of epidural anesthesia is the ability to continually deliver analgesia via an indwelling catheter. Effective epidural analgesia obviates the need for systemically administered opioids and the accompanying risk for respiratory depression, excessive sedation and gastrointestinal side effects. The technique of catheter placement is critical to properly enter the epidural space at the appropriate level without injury to the veins of Batson's plexus. Local anesthetic infused into the epidural space acts on the spinal nerve roots which are mixed nerves with somatosensory, somatomotor, and autonomic fibers. These component nerve fibers usually have different sensitivity to the blocking effect of anesthetic agents with the greatest

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effect on sympathetic autonomic fibers and the least effect on somatic motor nerves. Thus, the extent of autonomic, sensory, and motor blockade with a given epidural infusion may differ by several vertebral levels (1-4).

Role of Epidural analgesia in post operative period is well documented and known. But its role in preoperative period for these patients is poorly understood. Here we analyze role of preoperative epidural analgesia in postoperative outcome of patients with chronic limb ischemia and rest pain.

Material and Methods:-

It is a prospective study done in 40 patients with chronic limb ischemia and rest pain admitted in the Department of Vascular surgery, Government General Hospital, Madras Medical College, who underwent revascularization in form of lower limb infrainguinal bypasses were taken up for study. Period of study was 2018 to 2019. Here 20 patients each separated in two groups, group 1 – those received preoperative epidural analgesia for 48 hours prior to surgery and group 2 those who not received preoperative epidural analgesia (these patients received routine parental opioid analgesia). Outcomes inform of Pain scores (using Visual Analogue Scale), post operative inotropic requirement, electrolyte abnormalities (sodium/potassium), adverse myocardial events (diagnosed by increased myocardial enzymes, ECG changes), wound infections, graft patency, limb salvage rates and mortality.

Results and Discussion:-

It was found postoperative wound infection rates and adverse myocardial events were lower, along with improved bypass graft patency and limb salvage rates in group 1 patients those received preoperative epidural analgesia compared to group 2 patients. Pain scores, post operative inotropic supports, electrolyte abnormalities and mortality rates were similar in both groups.Details of data given in table 1.

Table 1:-

S.NO	FEATURES	GROUP 1	GROUP 2
1	Adverse Myocardial Events	**5% (1/20)**	**30% (6/20)**
2	Mortality	0%	0%
3	Electrolyte Abnormalities	15% (3/20)	20% (4/20)
4	Inotropic Support	10% (2/20)	15% (3/20)
5	Wound Infection Rates	**5% (1/20)**	**35% (7/20)**
6	Bypass Graft Patency	**100% (20/20)**	**70% (14/20)**
7	Limb Salvage Rates	**100% (20/20)**	**75% (15/20)**
8	Pain Scores Improvement	90% (18/20)	90% (18/20)

Many of these beneficial aspects of epidural anesthesia can be attributed to its better suppression of surgical stress, positive effect on postoperative nitrogen balance, more stable cardiovascular hemodynamics, better peripheral vascular circulation, and better pain control. Epidural analgesia can also be effective of reducing the dose of opiates, which improves gastric emptying and ileus and increases patient mobility. Patients who are mobilized can benefit from reduced thrombotic events and pulmonary complications. However, care must be taken to prevent significant hypotension, which can be caused by the administration of epidural anesthesia. (6,8)

Also Christopherson and colleagues reported a prospective randomized study comparing general and epidural anesthesia in 100 patients undergoing elective lower extremity bypasses. Although the data showed no evidence of an effect of anesthetic method on mortality or major morbidity, these authors found an unexpected dramatic reduction in postoperative graft thrombosis from a high rate of 43% with general anesthesia to 8% with the epidural technique over six-month follow-up. Additional investigators suggested that this may be due to an effect of epidural anesthesia on coagulation and fibrinolysis. Epidural anesthesia does not affect fibrinogen or plasminogen activator inhibitor (PAI) levels, however PAI levels were significantly increased in the first 24 hours postoperatively in patients receiving general anesthesia for lower extremity bypass. These findings suggest an early prothrombotic effect of general anesthesia and that epidural anesthesia possibly promotes fibrinolysis. (5-8)

Most of the patients with rest pain have severe limb edema preoperatively due to continuous hanging down of legs and sleeping in sitting position due to severe uncontrolled pain. With effective epidural analgesia limb swellings significantly get reduced before surgery which helps to prevent wound infections and reduce surgical dissections (2,3).

Main limitation of study is smaller group of patients, hence with larger group of patients with continued study will yield better stronger results.

Conclusion:-

Preoperative epidural analgesia has beneficial effect on postoperative outcome of patients with chronic limb ischemia and rest pain especially in form of lower wound infection rates and adverse myocardial events, along with improved bypass graft patency and limb salvage rates.

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