International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

Combined Sequential Spinal Epidural Anaesthesia in Geriatric with a STOP BANG Score of 6 for Total Knee Replacement Surgery - The Anaesthesiologist Plight

Dr. P Veena[1], Dr. Hally T[2]

[1]Assistant Professor, Department of Anaesthesiology, SUTAMS, Vattapara, Thiruvananthapuram, Kerala, India

[2]Assistant Professor, Department of Anaesthesiology, SUTAMS, Vattapara, Thiruvananthapuram, Kerala, India
(SUTAMS – Sree Uthradom Thirunal Academy of Medical Sciences,Thiruvananthapuram, Kerala)

Abstract: ***Background: Sequential combined spinal epidural anaesthesia (Sequential CSEA) is probably the greatest advance in central neuraxial block. Sequential combined spinal epidural anaesthesia is a safe, effective, reliable technique with stable haemodynamic along with provision of prolonging analgesia compared to spinal anaesthesia alone for high risk geriatric patients undergoing major orthopaedic surgery. Studies reveal that spinal anaesthesia combined with epidural technique has been shown to ameliorate the hyperglycemic as well as catecholamine surge to surgery[1]. We report a case of 65 year old obese patient with STOP BANG score of 6 with multiple comorbidities for Total knee replacement (TKR) under combined sequential spinal epidural anaesthesia with stable hemodynamics. To reduce the incidence and severity of hypotension a sequential combined spinal epidural technique has been described earlier in obstetric practice in which a spinal dose of local anaesthetic intended to be inadequate for surgery is used in an attempt to reduce hypotension but then the block is deliberately extended cephalad with the epidural drug.[2,7]***

Keywords: Sequential combined spinal epidural anaesthesia, Spinal anaesthesia, Hyperbaric Bupivacaine, Geriatric, Obesity, STOP BANG score.

1. Introduction

Geriatric patients undergoing major surgery have a significantly higher incidence of morbidity and morality compared with younger age group because of their reduced cardio respiratory reserve and concomitant diseases .Spinal anaesthesia is widely used in orthopaedic surgery[2]Combined spinal epidural, single segment, needle though needle technique is gaining popularity in modern anaesthesia practice. It offers rapid onset, efficacy and safety with minimal chances of toxic effects combined with potential for improving an inadequate block and prolonging duration of analgesia Intraoperatively and post operatively. This technique reduces or eliminates some of the disadvantages of spinal anaesthesia while preserving their advantages.

A more improved method called the **modified combined spinal epidural technique or the sequential combined spinal-epidural technique**, in which a spinal dose intended to be inadequate for surgery is used in an attempt to reduce hypotension and the block is then deliberately extended cephalad with the epidural drug. This technique is becoming increasingly popular in modern obstetric practice, because of various claimed benefits, mainly stable haemodynamic status. The sequential CSEA must be used in elderly high risk patients for orthopaedic surgery with encouraging results [3].

2. Case Report

We are reporting the case of 65 year old obese with BMI 35 with long duration diabetes and hypertension for Total knee replacement.

Irregular medications for hypertension and diabetes for the past 22 years.

On detailed ellicting of history a **STOPBANG score of 6** was made with no apneic episodes.

No past history of surgeries or anaesthesia exposure.

On physical examination

Weight 101kg, BMI of 35, Conscious oriented with BP - 130/80mmg, HR-88/min, regular

Intravenous access as well as regional anaesthesia access difficultly was anticipated. Other systemic examination reveals no abnormality.

Airway Assessment after COVID RTPCR - Revealed mallampatti class 3 ,short neck with anteroposterior diameter 42cm hence we anticipated difficult airway as well.

Spine examination – Painless and non-tender revealed a very narrow interspinous space without kyphoscoliosis, no neurological deficits.

Investigations- Blood sugars was optimized with insulin, urine acetone negative, all other investigations were within

normal Echocardiology revealed concentric LVH, Grade2 diastolic dysfunction with normal valves, No RWMA

Anaesthetic management
After arranging adequate blood products, a detailed written informed high risk consent was obtained for the planned anaesthesia procedure of combined sequential spinal epidural anaesthesia along with a backup plan for general anaesthesia in view of anticipated difficult regional anaesthesia access.

Sedative premedications were avoided, Patient was reassured to ally anxiety and was given T. Pantoprazole 40mg, along with patient's own medication, N. P. O was maintained.

After preparation of OT, checking anaesthesia machine with emergency resuscitation drugs, intravenous fluids, infusion pump, difficult regional anaesthesia equipments and equipment backup for general anaesthesia patient was shifted to OT.

On receiving inside OT – Monitors for ECG, Non-invasive Blood pressure, pulse oximetry, temperature probe were connected. Two wide bore cannulae were established under strict asepsis under local anaesthesia and was preloaded judiciously in view of concentric LVH with balanced salt solution.

In view of anticipated difficult regional anaesthesia access sitting position was opted for Sequential Combined Spinal Epidural anaesthesia.

Under strict asepsis under local anaesthesia with 2% plain lignocaine, L3-L4 Space was infilterated for epidural needle placement. In L3-L4 space, 18 G Tuohy needle was inserted, epidural space was identified by loss of resistance to air technique as well as by hanging drop technique and epidural catheter was threaded and fixed at 10 cm from skin following which a test dose of 3ml 2% lignocaine with 1 in 2 lakh adrenaline was given which revealed negative for intravascular/intrathecal route.

Under strict asepsis, in sitting position, under local anaesthesia was given in L4L5 space, 23 G Quincke spinal needle was inserted. After getting a clear free flow of CSF 0.5% heavy Bupivacaine 2ml was given .Sensory blockade was assessed in supine position After which 1.5-2 ml of 0.5% isobaric bupivacaine was given for every unblocked segment through epidural route to extend block to T10 (block was assessed in supine position).
Motor block of lower limbs was assessed bilaterally using **Bromage Scale** (grade I inability to move feet, II able to move feet only, III just able to move knees, IV full flexion of knee and feet).

Intra-operatively epidural top up with 3ml 2% Lignocaine with adrenaline and 3ml of 0.5% bupivacainewas given followed by epidural infusion with 0.5%bupivacaine at 4ml/hr with hourly blood sugar and urine output monitoring. Intraoperative blood loss was managed with judicious crystalloids. . Surgery was completed within 3.5 hrs and intra operative vitals were stable.

Postoperative analgesia was with epidural anaesthesia with 0.2%ropivacaine at 5 to 6ml/hour and supplemented with Epidural buprenorphine at 200 microgram at twelve hourly interval.

3. Discussion

Several studies have shown that analgesia levels obtained after subarachnoid injection of hyperbaric local anaesthesia solution are approximately 3-4 spinal segments higher in elderly compared with young adult patients. Precipitous arterial hypotension due to high levels of sympathetic block remains a common and acute problem associated with spinal anaesthesia in geriatric patients. Despite prophylactic measures such as fluid preload and prophylactic vasopressor (ephedrine), it may be difficult to maintain a near normal blood pressure in these patients [4]. To reduce the incidence and severity of hypotension a sequential combined spinal epidural technique has been described in obstetric practice in which a spinal dose of local anaesthetic intended to be inadequate for surgery is used in an attempt to reduce hypotension. The block is then deliberately extended cephalad with the epidural drug [5.] The onset of block is not delayed by this method but at the same time adequate level of sensory block is obtained. The sequential CSEA is particularly advantageous in high risk old orthopaedic patients where gentler onset of sympathetic block is desirable to reduce haemodynamic side effects. The block in sequential CSEA resulted from a relatively small amount of the local anaesthetic through spinal route followed by epidural drug which help to increase the subarachnoid block to desired level which conforms to the study of Swami et al for caesarean section. Many considerations have been given as to how epidural top up works after a spinal anaesthesia in sequential CSEA[6,7]

1) Continuing spread of initial subarachnoid block (correlated to epidural injection).
2) Existence of sub clinical analgesia at a higher level, which is enhanced and becomes evident by perineuraltransdural spread of epidural local anaesthetic.
3) Leakage of epidural local anaesthetic though the dural hole in subarachnoid space.
4) Change in epidural pressure. The pressure becomes atmospheric which may result in better spread of local anaesthetic through an effect on volume and circulation of CSF.
5) Compression of the theca by the epidurally injected volume of local anaesthetic (or even saline) solution resulting in a ‘squeezing’ of CSF and more extensive spread of spinal local anaesthetic.
6) Combination of last two mechanisms.

4. Conflict of Interest

No conflicts of interest

5. Acknowledgement

Department of Anaesthesiology, Allanaesthesiology technicians and OT, Postoperative ICU staffs.

References

[1] Cousins MJ. The spinal route of analgesia. ActaAnaesthesiolBelgSuppl 2 1988; 39: 71-82
[2] Dureja GP, Madan R, Kaul HL. Combined spinal epidural anaesthesia. In : Regional anaesthesia and pain management (current perspectives) B. I. Churchill Livingstone Pvt. Ltd., 2000; 139-45.
[3] Holmstrom E, Laugaland K, Rawal N, Haliberg S. combined spinal epidural block versus spinal and epidural block for orthopaedic surgery. Can J Anaesth 1993; 10(7): 601-06.
[4] Rank H. The elderly patient after anaesthesia and surgery. ActaAnaesthesiolScand (supple) 1969; 13: 9.
[5] Bernstein RL, Rosenberg AD. The fractured hip. In : manual of orthopaedic anesthesia and related pain syndromes. Churchill Livingstone 1993; 91-113
[6] Swami A, Mchale S, Abbott P et al. Low dose spinal anaesthesia for caesarean section having combined spinal epidural (CSE) technique (Abstract) AnesthAnalg 1993; 76: S 423.
[7] Dr. P Veena, Dr. Narayanan Unnithan H, Dr. Divya V, Dr. Jeetish Mathew. Graded epidural anaesthesia as the sole anaesthetic technique for a life salvaging below knee amputation on a high risk patient: A case report. Int J Med Anesthesiology 2021;4(2):29-31. DOI: 10.33545/26643766.2021.v4.i2a.230