

Cervical Epidural Anaesthesia for Breast and Thyroid Surgeries – A Safe Alternative Approach to General Anaesthesia

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Abstract: *The technique of cervical epidural anaesthesia (CEA) was first described by Dogliotti in 1933 for upper thoracic procedures. Cervical epidural anaesthesia can be administered in surgeries of neck, upper arm and chest. It has gained popularity due to its safety, relative bloodless field, stable hemodynamic, minimal morbidity and early postoperative recovery. The technique has become popular as it avoids the potentially arrhythmogenic and myocardial depressant effects of anaesthetics used in general anaesthesia (GA), specially in patients with cardio respiratory disorders.*

Keywords: cervical epidural anaesthesia, safe technique, thyroid and breast surgery, postoperative analgesia

1. Introduction

Cervical epidural anaesthesia(CEA) is a viable alternative to general anaesthesia (GA) for neck, upper arm and breast surgeries.^{1,2,3} In experienced hands the sole use of CEA is well established owing to the stable cardiorespiratory status and the avoidance of airway instrumentation.^{4,5,6} The incidence of complications is quiet low⁷.The potential advantage of employing this technique is where GA is contraindicated, as respiratory and hemodynamic inhibition is minimal with epidural⁸.There were three cases worth reporting as they posed a high risk for GA.

2. Case 1

A 67 year old female patient presented with carcinoma breast and was posted for modified radical mastectomy with axillary clearance. Patient was diabetic and hypertensive since 20 years. She was on Inj. Human Actrapid for glycemic control and Tab. Atenelol and Amlodipine for control of blood pressure .Patient was obese(100 kg), pale with pulse rate (PR) 84/min and blood pressure (BP) of 150/90mmHg. On investigations, blood biochemistry was normal and blood sugar was 130mg on the day of surgery. ECG showed inferolateral wall ischemia and 2DEcho revealed an ejection fraction of 40 % with apical hypokinesia and diastolic dysfunction.

3. Case 2

A 75 year old male with multinodular goiter of 10x8 cm was posted for total thyroidectomy. He was a chronic smoker with COPD since 10 years .On examination, pulse rate (PR)was 86/min, blood pressure (BP)140/80mmHg and respiratory rate (RR) was 20/min. Mallampati grade was III with slight restriction of neck extension. Systemic examination showed bilateral wheeze on auscultation which could not be further optimized by conventional treatment. On investigations, haemoglobin was 10 gm%, Sr.creatinine

2.2mg/dl and blood urea was 60 mg/dl. CXR was suggestive of chronic bronchitis with deviation of trachea to the left. Pulmonary function test (PFT) revealed severe obstructive airway disease. FEV1 was <70% predicted and FEV1/FVC was increased. His thyroid profile was normal.

4. Case 3

This is a case report of 45 year old lady, who was HbsAg+ve and had received Adriamycin based chemotherapy. She was posted for modified radical mastectomy with axillary clearance and had no other comorbidities. Patient had fatigability and shortness of breath since the start of chemotherapy. On examination she had PR of 96/min, BP of 120/80, pallor, jugular venous pressure was raised , had pedal edema, mild icterus and bilateral crepitations . Investigations revealed normal blood biochemistry except for altered liver function test. Her Serum bilirubin was 2.5 mg/dl, SGOT 100 IU/L and SGPT 90 IU/L, Alkaline Phosphates 250 IU/L, prothrombin time was normal and INR was 1.5. Her CXR showed cardiomegaly. ECG showed sinus tachycardia and left ventricular hypertrophy.2D-ECHO showed left atrial diameter: 35 mm, left ventricular end diastolic size:70 mm and ejection fraction: 30% with moderate pulmonary artery hypertension.

They were counseled on the previous day about the merits and demerits of both general anesthesia and regional anesthesia techniques and gave consent for regional anaesthesia .Under all aseptic precautions the neck was prepared and draped in sitting position. Patient was attached to multipara monitor. An intravenous access was achieved with 18 G cannula. A Touhy's epidural needle of 18 G was introduced in C7-T1 space. Epidural space was identified with loss of resistance technique. A test dose of 3cc of 2% xylocaine with adrenaline was injected. Patient was made supine and a bolus dose of 0.5% Bupivacaine 6cc was administered. Onset of action was noted within 10 minutes of injection. Adequate analgesia was achieved. Average

duration of surgery was 2-2.5 hours. A top up dose of 0.25% Bupivacaine 3cc was given as and when required. All patients had stable vital parameters. None of the patients had any complications like hypotension, bradycardia, vomiting and respiratory insufficiency. Postoperative analgesia was offered by 25 micrograms of fentanyl and 5cc of 0.125 % Bupivacaine.

5. Discussion

Breast and thyroid surgery is usually done under GA. However, there has been increasing interest in the use of cervical or high thoracic epidural anaesthesia due to economic reasons, less postoperative morbidity and excellent postoperative analgesia⁹ Combined GA with high thoracic/cervical epidural anaesthesia as a balanced technique is well reported^{10, 11}. With CEA air pollution is reduced and the technique is cost effective¹²

CEA results in sympathetic blockade and thereby reduces the heart rate, cardiac output and myocardial contractility. Blood pressure decreases or remains unchanged depending on the systemic vascular changes. Sympathetic blockade also reduces myocardial ischemia¹³. Hence in the first case as the patient had diabetes, hypertension and ischemic changes on ECG with a low ejection fraction, which would increase the risk of GA, CEA was administered. With CEA the patient had stable vital parameters and was comfortable. Early mobilization of the arm was possible because of good postoperative analgesia thereby preventing lymphoedema. The second case posted for thyroidectomy had COPD and deranged PFT and renal parameters .CEA causes minimal respiratory and hemodynamic inhibition and hence the technique was preferred. The third case had Adriamycin induced cardiomyopathy with ejection fraction of 30% and elevated levels of bilirubin with raised enzymes. Her coagulation profile was within normal limits and thus CEA was selected.

6. Conclusion

CEA provides stable vital parameters, bloodless field, good postoperative analgesia and early recovery. Patient remains awake during the surgical procedure and can sometimes report hoarseness of voice due to the pressure effect of retractors in the vicinity of recurrent laryngeal nerve. The technique requires special skill and expertise to avoid potential complications. Cervical epidural anesthesia is thus a safe alternative to GA.

References

- [1] Kulkarni K, Namazi IJ, Deshpande S, Goel R. Cervical Epidural Anaesthesia with Ropivacaine for Modified Radical Mastectomy. *Kathmandu Univ Med J* 2013 ;11 : 126
- [2] Stevens RA,StevensMM.Cervical and high thoracic epidural anesthesia as the sole anesthetic for breast surgery . *Techniques in regional anesthesia and pain management* 1998;2:13-18
- [3] Groeben , Harald,Schafer,Beatrix, Pavlakonic et.al.Lung functions under high thoracic segmental

- epidural anesthesia with opivacaine or bupivacaine in patients with severe obstructive pulmonary disease undergoing breast surgeries . *Anesthesiology* 2002;96:536-41
- [4] Bonnet F ,Derosier JP, Pluskwa F,Abhay K,Gaillard A.Cervical epidural anaesthesia for carotid artery surgery. *Can J Anaesth*1990;37;353-8.
 - [5] Michalek P,David I,Adamec M,Janousek L.Cervical epidural anaesthesia for combined neck and upper limb procedures .*Anesth Analg* 2004;99:1833-6.
 - [6] Khanna R,Singh DK.Cervical epidural anaesthesia for thyroid surgery. *Kathmandu Univ Med J* 2009;7:242-5.
 - [7] Asano Y,Hasuo M,Shimosawa S et.al.Carotid endarterectomy under cervical epidural anesthesia.No.*Shinkei Geka*.1993;21:787-91.
 - [8] Inoue Y,Nakazawa K,Hikawa Y et. al. Cervical epidural morphine and buprenorphine for postoperative pain relief after thoracic surgery . A comparative study in the same patients. *Masui*,1993;42:1338-42.
 - [9] Singh AP, Tewari M, Singh DK, Shukla HS. Cervical epidural anesthesia: A safe alternative to general anesthesia for patients undergoing cancer breast surgery. *World J Surg.* 2006;30:2043–2047.
 - [10]Nakatani T, Saito Y, Sakura S, Kanata K. Haemodynamic effects of thoracic epidural anesthesia during induction of anesthesia: an investigation into the effects of tracheal intubation during target-controlled infusion of propofol. *Anaesthesia* 2005; 60:530–4.
 - [11]Kumar A, Anand R, Wadhvani S, Rahal A. Effects of thoracic epidural anaesthesia on the haemodynamic response during induction and endotracheal intubation and on induction dose of propofol. *J Anaesthesiol Clin Pharmacol* 2010; 26:213-18.
 - [12]Guo X.A retrospective analysis of continuous epidural block . *Chung Kuo I Hsueh Ko HuschYuan Hsueh Pao* ,1993;1543740.
 - [13]Baylot D,Mahul P,Navez MI et al .Cervical epidural anesthesia.A nn.Fr.Anesth.Reanim., 1983;12:483 -92.