



“LABOUR ANALGESIA- A COMPARATIVE STUDY OF EPIDURAL BOLUS ADMINISTRATION OF 0.125% BUPIVACAINE WITH 0.0002% FENTANYL VERSUS 0.25% PLAIN BUPIVACAINE”

Anaesthesiology

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ABSTRACT

Introduction: Labour pain is of major concern since most parturients experience significant pain of extremely severe intensity. Labour pain can have deleterious effects on the mother, on the foetus and on the labour outcome. Epidural anaesthesia is an effective means of providing analgesia during labour. **Aim:** To compare the efficacy of epidural analgesia using 0.125% bupivacaine and 0.0002% fentanyl versus an epidural using 0.25% bupivacaine alone for labour analgesia. **Methods:** It is a prospective comparative study conducted at a Tertiary care hospital, Fifty parturients who were admitted to the antenatal ward and who requested pain relief during labor and who fulfilled the inclusion criteria were selected for the study after taking written informed consent. **Conclusion:** Analgesia provided by both techniques was found to be similar. Women in group FB retained motor power in their legs. Motor Block was minimized in Group FB. Both the intervention group had lesser impact on the hemodynamics. Complications were minor and were easily managed.

KEYWORDS

labour analgesia, parturients, epidural analgesia

INTRODUCTION

Labour analgesia became popular when John Snow administered chloroform anaesthesia to Queen Victoria for the birth of her 8th child Prince Leopold in 1853 and 9th child Princess Beatrice in 1857. This gave rise to the invention of various methods of regional analgesia. Kinkovich of St.Petersburg used Nitrous Oxide in Obstetric analgesia in 1880. Guedel designed an apparatus for the self administration of nitrous oxide in labor in 1910. Labour pain is of major concern since most parturients experience significant pain of extremely severe intensity. Labour pain can have deleterious effects on the mother, on the foetus and on the labour outcome.

Epidural anaesthesia is an effective means of providing analgesia during labour. The increased availability of epidural analgesia and the favourable experiences of women who have had painless labor with epidural block have reshaped the expectations of pregnant women entering labor.

Aim of study:

To compare the efficacy of epidural analgesia using 0.125% bupivacaine and 0.0002% fentanyl *versus* an epidural using 0.25% bupivacaine alone for labour analgesia.

MATERIALS AND METHODS:

It is a prospective comparative study conducted at a Tertiary care hospital, Fifty parturients who were admitted to the antenatal ward and who requested pain relief during labor and who fulfilled the inclusion criteria were selected for the study after taking written informed consent and obtaining clearance from institutional ethical committee.

Inclusion Criteria:

ASA Status I & II ; Females in the age group from 18 to 30 years; Primigravida; Adequate gynaecoid pelvis; Cervical dilatation 3-5 cm.

Exclusion Criteria:

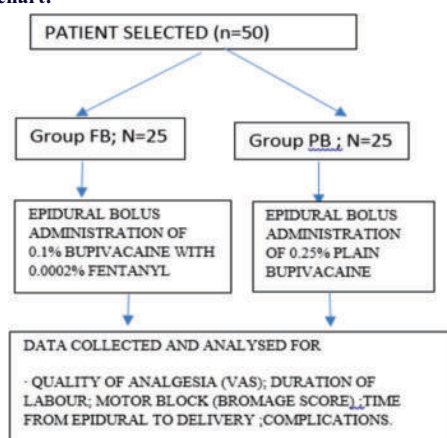
Patient refusal ; Patients with pregnancy induced hypertension, heart disease, anaemia and other complications of pregnancy ; Cervical dilatation greater than 5 cm ; Patients who received systemic opioids within 4 hours of epidural request ; Coagulopathy; Patients with clinically significant renal, hepatic, cardiovascular, haematopoietic, pulmonary, gastrointestinal, nervous or endocrine disorders.

Procedure:

IV access was secured but no IV fluid load was given. The patients were shifted to the operation theatre for insertion of the epidural catheter in aseptic manner. An epidural catheter was inserted at the L2-L3 interspace using a standard midline technique with an 18-gauge Tuohy needle. Patients entered in to the study in a randomized order to

receive one of the study treatments. The visual analog scale was shown to them and interpretation of the scale explained in detail. Anaesthesia machine was checked and all emergency airway equipments like laryngoscopes, endotracheal tubes, LMAs, oropharyngeal airways were kept ready. An emergency drug tray containing all the emergency drugs was also kept ready.

Study chart:



PARAMETERS STUDIED:

- Quality of analgesia (VAS)
- Duration of labour
- Motor block (Bromage score) ; Time from epidural to delivery.

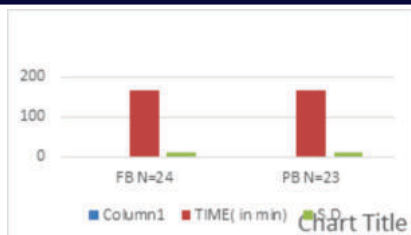
Data Collected And Analysed For Quality Of Analgesia (vas); Duration Of Labour; Motor Block (bromage Score) ;time From Epidural To Delivery ;complications.

Statistical Analysis:

Descriptive analysis for nonparametric variables was expressed in proportion and parametric variables in mean and standard deviation. The treatment difference was assessed using t test for independent samples for parametric variables and by Chi square test for non-parametric variables. Statistical significance was assessed using $p < 0.05$ as statistically significant. All data were computed using Microsoft excel and analysed using SPSS software for Microsoft.

RESULTS:

Physical characteristics like age, height and weight were comparable in both the groups.

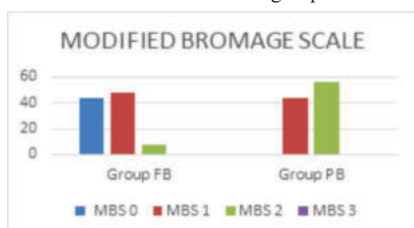


Time From Epidural To Delivery

The time from epidural to delivery in both groups were comparable. The Student t test done on the values revealed no statistical significance ($p > 0.5$). The blood pressures (both systolic and diastolic) and pulse rate recorded during the Epidural analgesia in both the groups were not statistically significant.

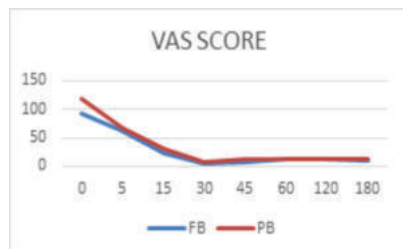
Motor Blockade:

This was assessed using the Modified Bromage Scale. The patients in group FB had minimal motor blockade when compared to patients in group PB. The Chi-Square test showed statistical significance with regard to motor blockade between the two groups.



Vas Scale:

The pain perceived by the patients was assessed by a VAS scale shown to them which contained pictures of faces depicting pain on one end and smiling face on the other end. There were pictures expressing intermediate emotions in between them. The other side had a scale marked from 0 to 100. The scale had a slider which the patients move to point below the image which they felt to express their perceived pain. The VAS score was assessed at 0, 5, 15, 30, 45, 60, 120 and 180 minutes. The initial VAS score ranged between 80 and 100 for all the patients. VAS score for pain was comparable in both groups throughout labour.



Patient Satisfaction Level

This was assessed by asking the patient how they felt at the end of the delivery. Majority of patients (68%) in group FB had excellent pain relief. 32% of patients in group FB had good pain relief. In group PB, 60% of patients had fair pain relief and 40% of patients had good pain relief.



Complications

Hypotension (SBP < 90 mm Hg or $< 30\%$ of baseline) was present in one case each in both the groups. Both cases responded to 6 mg of Ephedrine. Pruritus was present in one case in the FB groups. It was only mild and reassurance was all that was needed. One patient in group PB had vomiting, None of the cases showed respiratory depression and urinary retention.

CONCLUSION:

Analgesia provided by both techniques was found to be similar. Women in group FB retained motor power in their legs. Motor Block was minimized in Group FB. Duration of labour and time from insertion of the epidural to delivery was similar in both groups, but in group FB, duration of the second stage was significantly shorter. In addition, maternal satisfaction with epidural analgesia was higher in group FB.

Both the intervention group had lesser impact on the hemodynamics. Complications were minor and were easily managed.

REFERENCES:

- Brownridge P, Cohen SE, Ward ME: Neural blockade for obstetrics and gynecologic surgery. In: Cousins MJ, Bridenbaugh PO, ed. Neural Blockade in Clinical Anesthesia and Management of Pain, 3rd ed. Philadelphia: Lippincott-Raven; 1998:557-604.
- James KS, McGrady E, Quasim I, Patrick A. Comparison of epidural bolus administration of 0.25% bupivacaine and 0.1% bupivacaine with 0.0002% fentanyl for analgesia during labour. Br J Anaesth. 1998 Oct;81(4):507-10.
- Janet A Picket. History of obstetric analgesia and anaesthesia. In: Collis R, Plaat F, Urquhart J, editors. Text book obstetric anaesthesia. Cambridge university press, 2002:1-20.
- Thomas E. Epidural analgesia for patients in labour. Singapore Med J 1990; 31:262-266.
- Larson MD. History of anaesthetic practice. In: Miller RD, editor. Miller's anaesthesia. Elsevier, 2005: 27-28.
- Scott DBB, Lee A, Fagan D, Bowler GMR, Bloomfield P, Lundh R. Acute toxicity of ropivacaine compared with that of bupivacaine. Anaesth Analg. 1989; 69(6):536-9.
- Liu EH, Sia AT. Rates of caesarean section and instrumental vaginal delivery in nulliparous women after low concentration epidural infusions or opioid analgesia: systematic review. BMJ. 2004 Jun 12;328(7453):1410.
- Rofaeel A, Balki M, Carvalho JC. Case report: Successful labour epidural analgesia in a patient with spinocerebellar ataxia. Can J Anaesth. 2007 Jun;54(6):467-70.
- Porter JS et al., The effect of epidural opioids on maternal oxygenation during labour and delivery. Anaesthesia 1996; 51: 899-903.
- Norris MC. Are combined spinal-epidural catheters reliable? International Journal of Obstetric Anaesthesia 2000;9:3-6
- Gary M. Stocks, Stephen P. Hallworth, Roshan Fernando, Adrian J. England, Malachy O. Columb, Gordon Lyons. Minimum local analgesic dose of intrathecal bupivacaine in labor and the effect of intrathecal fentanyl. Anesthesiology 2001;94:593-8.