EVALUATION OF MATERNAL AND FOETAL OUTCOME IN LOW DOSE EPIDURAL ANALGESIA FOR PAINLESS LABOUR

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ABSTRACT :

Background The distress and pain which women often endure while in labour, is beyond description and seems to be more than what human nature will be able to bear under any other circumstance. Epidural analgesia, with lower concentration namely “walking epidural” where ambulation is possible is recently becoming popular.
Methods: The study was conducted at mookambika medical college between 2023- 2024. 40 Parturients who were administered epidural analgesia for pain relief.Inclusion criteria are spontaneously labouring mothers,single term cephalic foetus,cervix 3 to 4 cm dilated,normal obstetric and medical history.,no contraindication for epidural analgesia. Exclusion criteria are If they have received an opiod drug preceding epidural analgesia,Malpresentation and multiple pregnancies.,Previous history of miscarriages,Major degree of CPD
Results: In the epidural group, 87% of the parturients were allowed to ambulate. Only 5 parturients developed motor block.Bleyart et al., 1979 demonstrated that 96 % were able to ambulate in their study using 0.125% Bupivacaine.

Conclusion: From this study, it is concluded that,Low dose epidural analgesia provides effective pain relief during labour with ambulation. Active management of labour with oxytocin acceleration in the second stage and administering low dose epidural analgesia do not prolong the second stage markedly and decrease the rate of operative deliveries.

Keywords: Epidural analgesia,Labour

INTRODUCTION:

The word pain is derived from the latin word “poena” meaning punishment. In the ancient times pain was considered to be punishment from god.

The distress and pain which women often endure while in labour, is beyond description and seems to be more than what human nature will be able to bear under any other circumstance. James Simpson described the first obstetric analgesia 150 years ago.

Although not without risks epidural analgesia is the gold standard for pain relief in labour. There are side effects serious, and so serious, attached to all procedures carried out in medical practice and risk to benefit ratio with each of these procedure is the major determinant of its continuation. Epidural analgesia, with lower concentration namely “walking epidural” where ambulation is possible is recently becoming popular.

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AIM AND OBJECTIVES OF THE STUDY:

- To determine the efficacy of epidural analgesia as a method of pain relief in labour.
- To examine the effect of epidural analgesia on progress of labour.
- To assess the effect of epidural analgesia on the outcome of labour.
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MATERIALS AND METHODS:

The study was conducted at mookambika medical college between 2023- 2024. 40 Parturients who were administered epidural analgesia for pain relief.Inclusion criteria are spontaneously labouring mothers,single term cephalic foetus,cervix 3 to 4 cm dilated,normal obstetric and medical history.,no contraindication for epidural analgesia.

Exclusion criteria are If they have received an opiod drug preceding epidural analgesia,Malpresentation and multiple pregnancies.,Previous history of miscarriages,Major degree of CPD.All women fulfilling the inclusion criteria were identified, and the study was explained. If they agreed, they were allotted to group A. If they refused, they were allotted to group B. A written consent duly signed by the patient was obtained.

After the baseline assessments, the parturient was wheeled into the operation theatre. The pulse oximetry, the boyle's apparatus, and emergency drugs were checked and kept ready.
Within 30 mins of recruitment, determination of cervical dilatation was done and the patient prepared for study. Intravenous line was secured and maternal circulation was preloaded with 500ml of Ringers lactate solution.

Under strict aseptic precautions with the patient in right lateral position, 17G Tuohy needle was introduced through the L2 – L3 interspace. The epidural space was identified, and the catheter was then introduced for a distance of 5 cm into the epidural space and aspirated gently for blood or cerebrospinal fluid. After the catheter's position was checked, a test dose of 3ml of 1.5% lignocaine with 15mcg of adrenaline was injected via the catheter. The catheter was then secured and the patient shifted to labour room. In the labour room the parturient was placed in supine position with a left tilt (by using a wedge) and head end elevation of 15– 20 degrees. An initial bolus of 10ml of the study solution containing 0.1% bupivacaine with 2mcg per ml of fentanyl was administered.

The maternal heart rate, blood pressure, respiratory rate, SpO2, foetal heart rate, VAS, sensory level and motor level were assessed every 2 minutes for the first ten minutes and thereafter every 5 minutes till 30 minutes and then every 30 minutes till next topup. The time of onset of painless contraction was noted. The establishment of epidural blockade was identified by loss of pinprick sensation. VAS scoring was performed every 30 mins after each topup till the end of delivery. Hypotension (defined as a decrease of 20% from the baseline blood pressure) was treated with ephedrine. Motor block assessed by Bromage scale.
Statistical analysis was done using the statistical package for social sciences (SPSS).Different statistical methods were used as appropriate. Mean ± SD was determined for quantitative data and frequency for categorical variables. The independent t- test was performed on all continuous variables. The normal distribution data was checked before any t-test. The Chi-Square test was used to analyze group difference for categorical variables. A p- value < 0.05 was considered significant.

RESULTS

EFFECT OF ANALGESIA (MEAN ± SD)

- Time of onset of 1st painless contraction - 9.38 ± 1.72
- Time of loss of sensation of pin prick- 10.81 ± 2.1

MAXIMUM HEIGHT OF SENSORY BLOCK.

n = 38 (excluding 2 LSCS)

	Sensory level	A group	%
1.	<T6	0	0%
2.	T6-T10	38	100%
3.	>T10	0	0%

Maximal height of sensory block was confined to T6 to T10.

VAS:

n = 40.

	VAS (A) Mean ± SD	VAS (B) Mean ± SD	(P) Students 't'test.
1st stage	2.4 ± 0.47	8.3 ± 0.46	0.000
2nd stage	4.3 ± 0.49	9.3 ± 0.46	0.000

There was highly significant pain relief in the group with epidural analgesia. Pain relief in the 1st stage was better than the 2nd stage of labour.

EPISIOTOMY PAIN RELIEF

Grade	Group A	%

0	25	66
1	10	26
2	3	8

In group A 66% had no episiotomy pain. 3 patients had intolerable pain.

VITAL SIGN

NVitals	(A) Mean ±SD	(B) Mean± SD	(P) Students 't'test
Pulse rate	92.9 ± 0.32	104.6 ± 1.36	0.00
Systolic B.P	120.6 ± 11.86	131.1 ± 2.62	0.00
Diastolic B.P	74.2 ± 3.21	79.2 ± 2.51	0.00

Hemodynamic stability was significantly better in group A

MODE OF DELIVERY

Mode of delivery	(A) Mean ±SD	(B) Mean± SD	(P) Fishers 'z'test.
Labour natural / labour natural with episiotomy	36	36	1.0000
Forceps	2	2	1.0000
Caesarean section	2	2	1.0000

There was no statistically significant difference with respect to the mode of delivery between the two groups.

Cases taken up for caesarean section in group A (epidural group),One case for foetal distress with cord once around the neck and the other for failure to progress.
Two cases of outlet forceps were for failure of secondary powers.

APGAR SCORE

Min .	Apgar score(/ 10)	A	B
1´	<7	0	1
	7 - 10	40	39
5´	<7	0	0
	7 - 10	40	40

Only one baby in control group had APGAR score less than 7 at 1 minute.

DISCUSSION:

Labour pain is a normal physiological event which indicates the beginning of the labour processThe main issue that is to be noted while considering pain relief is to minimize its effects on the maternal powers (uterine activity and the progress of labour), the passage (birth canal), and the passenger (foetus).

Bupivacaine 0.1% was used for the study. The rationale behind using this concentration was based on the following studies:Hart Em et al.,2003 (29) reported in their study that using a concentration of 0.1 % of Bupivacaine with fentanyl , maternal satisfaction was high and reduces the incidence of instrumental deliveries when compared to patients who were administered 0.25% Bupivacaine.

Sharma et al., 2007 (27) reported that 0.1% Bupivacaine with fentanyl 2 mcg / ml proved to be effective in labour pain relief.

With regard to the onset of analgesia, the mean time of onset of painless contractions was 9.38 ± 1.72 min, and the loss of pin prick sensation was 10.81± 2.1 min.These findings correlate with the study of Cohen et al., 1987. He found that the onset of analgesia was 7.0 ± 1 min in patients

receiving 0.25% Bupivacaine as initial bolus with addition of 50 mcg fentanyl.(Higher concentration hastened the onset).

All the parturients had a sensory level between T6 – T 10. In none of them did the level ascend beyond T6.Bellini et al., reported that 81% of the patients who were administered 0.125% Bupivacaine demonstrated a block of T6 – T10.

In the epidural group, 87% of the parturients were allowed to ambulate. Only 5 parturients developed motor block.Bleyart et al., 1979 demonstrated that 96 % were able to ambulate in their study using 0.125% Bupivacaine.

The pain relief was good in the epidural group (mean VAS score in the 1^{st} stage was 2.4 and the 2^{nd} stage was 4.3). They correlate well with the studies of:Sharma et al., 2007 reported that 0.1% Bupivacaine with fentanyl produced a VAS of 1-3 in the first stage and 4-6 in the second stage in labouring women.

Vella LM et al., 1985 reported that addition of fentanyl to 0.125% of Bupivacaine relieved the perineal pain better.

In the epidural group 66% had no pain during episiotomy and only 8% had intolerable pain.Smith et al., 2002 (28) in her study demonstrated that only 22 – 30 % of the patients needed an additional local infiltration for relief of pain during an episiotomy while receiving 0.125% Bupivacaine with fentanyl.

Hemodynamic stability was definitely better in epidural group.The increased pulse rate and blood pressure found in the control group was due to the sympathetic activity, provoked by pain, anxiety and apprehension. Epidural analgesia by producing complete block of nociceptive pathways obviates the pain induced sympathetic activity and this eliminates alterations in cardiac output and blood pressure. This is an advantage in patients with pregnancy induced hypertension.

No significant difference was noted between the two groups.This was achieved by ensuring avoidance of maternal complications like hypotension or aortocaval compression by use of a wedge and cardiotocogragh monitoring.

The duration of first stage of labour was not significantly different in both groups, whereas the second stage was prolonged in epidural group from about 33 min. (group B) to about 52 mins. (group A) compared to the control group. Although the duration of second stage is longer than the control, it is not prolonged markedly (52mins.), and well within the normal limits. Low dose epidural and acceleration of labour with oytocin does not prolong the second stage. Although one may see an increase in the duration of labour with epidural analgesia the risk of this to the parturient and foetus is negligible.

Chestnut et al., 1990 (6) and Craw-ford et al., 1972 (9)have also concluded that, though there was no clear effect on 1^{st} stage , epidural analgesia is consistently associated with prolonged 2^{nd} stage.

Prolongation of 2^{nd} stage is not in itself harmful to the foetus as long as the maternal and foetal well-being is preserved.Cohenet al., 1977 (7) in a retrospective study found no relationship between apgar and duration of second stage.Rusell R and Reynold et al in 1996 observed that the

administration of a dilute solution of local anaesthetic is less likely to result in prolonged labour.Sharma et al., 2007 (27) reported that low dose epidural analgesia does not prolong the second stage markedly (30-90 mins.).Saunders et al., 1989 (32) reported shorter second stage in epidural analgesia with oxytocin acceleration.

CONCLUSION:

From this study, it is concluded that,Low dose epidural analgesia provides effective pain relief during labour with ambulation. Active management of labour with oxytocin acceleration in the second stage and administering low dose epidural analgesia do not prolong the second stage markedly and decrease the rate of operative deliveries.Though there may be increase in the duration of labour with epidural analgesia, the risk of this to the parturient and the foetus is negligible Epidural analgesia does not result in an increase in the instrumental delivery rate or caesarean section rate.

BIBLIOGRAPHY

1. ACOG Committee Opinion : Obstetrics forceps. Washington DC 88;,59.
2. AMJ OBG Gynaec, 1999. Feb; 180 ; 353 -9 Yancey MK, Pierce B , Schweitzer D , Daniels.
3. Bailey PW, Howard FA, Epidural analgesia and forceps delivery , laying a bogey. Anaesthesia 1983 ; 38 282-5.
4. Bonica J.J.John S. MacDonald : Principles and practice of obstetrics analgesia and anaesthesia 1995.
5. Bromage Epidural Analgesia 1978. Philadelphia WB Saunders.
6. Chestnut DH et al., Continuous infusion of 0.0625% Bupivacaine - 0.002% fentanyl during second stage of labour. Anaesth. 1990; 72: 613-8.
7. Cohen W.R.. Influence of the duration of the second stage labour on the perinatal outcome.O &G, 1977; 49: 266-9.
8. Controversies in bstetrics Anaesthesia Vol. 1 & 2 .Barbara Morgan.
9. Crawford JS, The Second thousand epidural blocks in an obstetrical hospital practice. BJA, 1972; 44: 1277-86.
10. Doughty A. Selective epidural analgesia and the forceps rate. BJA, 1969; 41: 1058.
11. Hoult IJ. Maclennan AH, Carie, LES, Lumbar epidural analgesia in labour, relation to instrumental delivery.BMJ 1997; p 14- 16.
12. Howell C.J. Epidural Vs Non epidural foe pain relief in labour, Cochraine Review Issue. 1999 (4), Oxford Update software.
13. Impey L, Mc Quillan k , Robson M . AMJOBG 2000 Feb; 182 (2) 358 – 63.
14. Judith P.Rooks , CNM, MPH, FACNM. Epidural during labour and childbirth.
15. Kadar N, RomeroR. Prognosis of future child bearing after midcavity, instrumental deliveries, O & G. 1983 ;62; 166- 78.
16. MacQueen J, Mybcea L Lumbar epidural analgesia BMG 1977; 1: 640 – 1.
17. Palmer S. Lobo A, Tinnel C . Pain and duration of latent phase labour predicts the duration of active phase labour. Anaesthesiology, 1996;85;a 858.
18. Ferne B. Sevarino , M.D. Obstetrical labour analgesia – Jan -2000-

http://www.gasnet.org/esia/2000/January/labour.analgesia.html.

19. Ramin SM, Gambling DR, Lucas MJ, Randomised trial of epidural Vs intravenous analgesia during labour. Obstet. Gynaec. 1995 ;86,783
20. Robert D . Vincent , J.R. MD and David. H. Chestnut, MD. University of Alabama school of medicine Birmingham , Alabama.
21. Sallyc Morton, Mark S . Williams, B. Kuler Epidural analgesia for labour of caesarean delivery rates .Ob.Gyn. Vol. 83 June 1994. 1045- 52.
22. Stallworthy J, Active Labour.BMJ 1969; 1 7-9.
23. Studd. JWW. Crawford JS, Duignam NM, Effect of lumbar epidural analgesia on the outcome of labour of spontaneous onset. BJOG 1980; 87:1015 – 21.
24. Thorburn J, Moir DD Exdradural analgesia. Brit Journ of Anaes ; 1981 ; 53 933 -9.
25. Turner MJ, Brassil M, Gordon H. Active management of labour associated with decrease in caesarean section. Obst. And Gynae..1987; 71 : 150 – 4.
26. Sharma et al., Caesarean delivery a randomized trial of epidural vs patient controlled meperidine analgesia. Anaesthesiology 1997; 87: 487-94.
27. Walking epidural: An effective method of labour pain relief with 0.1% Bupivacaine with 0.0002% fentanyl. Sharma et al., MJAFI, 2007; 63: 44-46.
28. Owen MD, Smith Tet al., Ropivacaine 0.075% and Bupivacaine 0.0075% with fentanyl and equivalent of labour Epidural analgesia, Anaesth. Analog. 2002; 94: 179-83.
29. Hart Em et al., Impact study of the introduction of low dose epidural (0.1% Bupivacaine) compared with 0.25% Bupivacaine for labour analgesia. Int J Obstet Anaesth 2003 Jan; 12 (1): 4-8.
30. Lieberman E et al., Obstet Gynec., 1996;88: 993-1000.
31. Johnson S et al., The effect of epidural analgesia on the length of labour. J Fam Pract. 1995; 40: 244-7.
32. Saunders NJ et al., Oxytocin infusion during second stage in primiparous women using epidural analgesia, BMJ, 1989; 299: (6713): 1423-26.