International Journal of Scientific Research and Management (IJSRM)
||Volume||5||Issue||03||Pages||5226-5232||2017||
Website: www.ijsrm.in ISSN (e): 2321-3418

Cervicographic progress in active Phase and obstetric outcome in Patients undergoing labour under Epidural analgesia"

Priyanka Goel[1] , Pratibha Kulkarni[2]

[1]Senior resident, Mahatma Gandhi Medical College And Hospital,Jaipur, Rajasthan

[2]Consultant, Deenanath Mangeshkar Hospital And Research Centre,Pune, Maharashtra

Abstract

Objective: To analyze the progress of labour and then the obstetric and fetal outcome of the patients who received epidural analgesia in labor and comparing them with those who did not receive epidural analgesia.
Study design: Hospital based prospective comparative study.
Methodology: The study involved 200 patients who were divided into 2 groups on the basis of whether they received epidural analgesia or not, with 100 patients in each group. The advantages and disadvantages of epidural analgesia were evaluated.
Results: When compared with the non-epidural analgesia group (n = 100), the group that received epidural analgesia (n = 100) had significant prolongation in the duration of first and the second stage of labour and higher likelihood of instrumental delivery. 57.4% patients in the epidural group delivered to the left of the progress line whereas 69.6% patients in the control group delivered to the left. There was also an increased incidence of caesarean deliveries in the epidural group as compared to the control group but the difference was not significant statistically (20% Vs 17%, $p>0.05$). There was no difference in the neonatal outcome of the patients who received epidural analgesia as compared to control group. Moreover, pain relief and maternal satisfaction was excellent in patients who requested epidural analgesia.
Conclusion: Compared with other techniques, epidural analgesia is the most effective form of analgesia. Factors contributing to the progress and outcome of labour are multiple and complex. Epidurals do not increase caesarean section rates. However, we must strive to reduce any effect on duration of labour and instrumental vaginal delivery rates by minimizing motor block through the use of low dose local anaesthetic and opioid combinations. The addition of patient- controlled epidural analgesia and innovations using new technologies enhance patient satisfaction.

Key words: epidural analgesia, labor, LSCS, partogram

Introduction

Labour and delivery causes severe pain in many women. And thus labour analgesia or relief of pain during childbirth has been of great importance since ancient times[1]. Labour has been portrayed as a painful, life threatening and fearsome event since the earliest recorded history and has held that status until the last century[2].The goal of maternal labour analgesia is relief of pain without compromising maternal safety, progress of labour and foetal well-being. Regional anaesthesia has been preferred over other agents because of its efficacy and safety, if properly conducted. It provides analgesia while the parturient stays awake and participates in labour and delivery[3]. Along with the search for an ideal analgesic technique, there has been a search for an ideal local anaesthetic drug[4].

Aims And Objectives

1. To know the effect of epidural analgesia on the progress of labour in terms of duration of labour in first stage, active stage, second stage and studying partograms for all the patients.
2. To study the effect of epidural analgesia on the outcome of labour.
3. To find the efficacy of epidural analgesia in terms of maternal pain relief by using visual analog scale.
4. To know the Neonatal outcome by requirement of NICU after epidural analgesia.

Materials And Method

The present study was conducted on 200 nulliparous women enrolled in Deenanath Mangshkar Hospital and Research Institute, Pune in the Department of Obstetrics and Gynaecology from 1st October 2011 to 30th April 2013. The nulliparous women requesting epidural analgesia were assigned as the study group (100 cases) and women not receiving epidural analgesia were included in the control group (100 cases). Approval was obtained from Institutional Ethical Committee. The cases selected in this study were all patients who requested epidural analgesia and who fulfilled the inclusion criteria. Written informed consent was taken. Controls were selected randomly after matching the necessary inclusion criteria with the study group.
Data was analyzed using SPSS version 20 statistical software and the statistical tests used were:

- **a.** Chi-Square test
- **b.** Fisher's Exact test
- **c.** Student's t-test for Equality of means

Inclusion criteria was based on the Age Group 20-35 yrs, Primigravida, Singleton pregnancy, Gestational age between 37 to 41 weeks, Cephalic presentation, spontaneous laboring patients with absence of maternal and foetal co-morbities.

Exclusion criteria were defined according to the maternal factors like Multiparity, Gestational age less than 37 weeks, history of coagulation disorders, Symptomatic heart disease, frank infection at the needle site, haemodynamic instability ,Pre-eclampsia, Gestational Diabetes mellitus and the foetal factors like severe Intrauterine growth retardation and Non vertex presentation.
Parturients who satisfied the inclusion criteria were explained about the study and written informed consent was taken. They were explained and demonstrated the use of 10 cm Visual Analogue Scale, for quantification of their pain at the peak of uterine contraction.
On admission a detailed medical, obstetric and anaesthetic history was taken and later followed by a detailed general and obstetric examination. Basic investigations like hemoglobin percentage, blood grouping and typing, urine analysis was done.

Drug used to provide epidural analgesia in this study was-

Isobaric Ropivacaine hydrochloride 0.75% preservative free 20 ml vial.

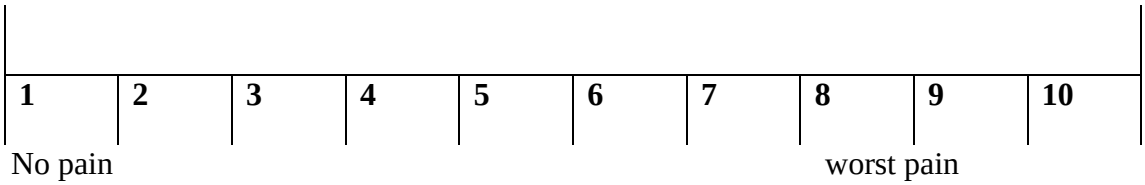
Study Design:

The present study was a hospital based Prospective and comparative study. Epidural analgesia was given by an expert anaesthesiologist and monitored in labour room where all resuscitative measures were readily available. Epidural space was identified at the level of L_3-L_4 interspaces in sitting position under all aseptic conditions using 18 G Tuohy's epidural needle and by loss of resistance to saline technique. A closed end multi-orifice 20 G epidural catheter was inserted 5 cm into epidural space cephalad and aspirated to test for inadvertent intrathecal or intravascular placement. The catheter was then secured and the parturient was placed in supine position with left uterine displacement.

Loading dose of 15ml of 0.15% Ropivacaine with 2 µgm Fentanyl/ml of 0.15% Ropivacaine was given. This was followed by continuous epidural infusion of 0.15% Ropivacaine only (using 0.9% normal saline for dilution) at 6-8 ml/hr to be started 30 minutes after loading dose.

Pain intensity was evaluated during contraction using Visual Analogue Pain Scale [0-10] . VAS score for pain consisted of a 10 cm line, zero representing 'no pain' and 10 representing 'worst pain'. A reduction in pain score to less than 3 was considered to represent onset of analgesia.

Visual Analog Scale (VAS)



Maternal haemodynamics (pulse, blood pressure, SpO_2) was measured. Sensory and motor blockade was assessed by bilaterally by anaesthetists after giving epidural analgesia. Breakthrough pain was treated with 8-10 ml bolus of 0.15% of Ropivacaine.
The cervicographic analysis of the progress of labour was done meticulously and plotted on a partogram. CTG recordings were taken at regular intervals.
The epidural catheter was removed after delivery or caesarean section with tip intact. Immediate and early complications if they occurred were noted in the proforma.
In the control group, selection of cases was done randomly. Patient had spontaneous labour which was augmented by an oxytocin infusion just as in the study group. Progress of labour was charted on Partogram. Neonatal welfare was assessed by Virginia APGAR score, any abnormality detected was noted down and shifted to NICU if required in both the groups.

Observations And Results:

The most common age group on which the study was carried out was between 26-30 years in both the groups. When epidural analgesia was given to the patients, the mean duration of first stage, active stage and second stage was 13.15 hrs, 4.37 hrs and 79.51 minutes respectively as compared to control group where the mean duration was 10.9 hrs, 3.51 hrs and 58.31 minutes respectively. The *p* value was < 0.5 in all the stages of labour which is statistically significant. Therefore there was prolongation of first and second stage of labour when epidural analgesia was given to the patients (table no.1)
The incidence of instrumental deliveries was more in epidural group as compared to the control group with *p* value being 0.02 (<0.5) which is statistically significant. Number of LSCS was also found more when epidural analgesia was given (20% vs 17%) but the difference was not significant (table no.2)
The number of patients delivering to the left of the action line was more in the control group as compared to the epidural. But the difference was not significant statistically as shown by the *p* value calculated by using Chi-square test which is >0.05 (table no.3).
Neonatal outcome was assessed on the basis of admissions to NICU. The difference was not statistically significant as 11% vs 6% babies were shifted to NICU when epidural analgesia was given and not given in labour respectively ($p = 0.19$, NS).
Pain assessment was done by visual analog scale (VAS) in epidural group and the control group in which parenteral opioid was given for the pain relief. Epidural analgesia provided adequate pain relief with VAS score

between 0 to 3 in 77% of patients whereas parenteral opioid provided very less pain relief with VAS score between 7 to 10 in 85% of patients.

Table 1: Effect of epidural analgesia on duration of labour

S.No.	CRITERIA	EPIDURAL	CONTROL	*p* value
1.	**Age**	27.85 ± 2.94 yrs	25.81 ± 3.09 yrs	
2.	**Duration**			
	first stage	13.15 ± 6.69 hr	10.9 ± 4.56 hr	0.01
	Active stage	4.37 ± 2.15 hr	3.51 ± 1.76 hr	0.005
	second stage	79.51 ± 31.17 min	58.31 ± 35.27 min	<0.001

Table 2: Outcome of labour

OUTCOME	EPIDURAL N = (100%)	CONTROL N = (100%)	*p* value
FTND	37 (37%)	53 (53%)	0.02
INSTRUMENTAL	43 (43%)	30 (30%)	0.05
LSCS	20 (20%)	17 (17%)	0.5

Table 3: Cervicographic analysis of labour

GROUP (N)	Deliveryto Left (%)	Delivery to Right (%)	*P* Value
EPIDURAL (94)	54 (57.4%)	40 (42.6%)	0.08
CONTROL (92)	64 (69.6%)	28 (30.4%)	(>0.05)

Discussion:

The effectiveness of epidural analgesia in modern obstetrics is well established. Its effects on the course of labour and mode of delivery are still controversial. Several retrospective studies have consistently demonstrated an association between epidural analgesia and increased durations of both the first and second stages of labour, but the few randomised, prospective studies could not find any significant relation regarding the effects of epidural analgesia on the duration of labour as compared to parenteral analgesia.

Table 4: Effect of epidural vs parenteral analgesia on duration of labour

Author	Year	Observation
Wong et al[5]	2005	Shorter 1st stage but no effect on 2nd stage with epidural
Shahram et al[6]	2006	No effect on 1st, 2nd stage with epidural
Ching-Chung Liang et al[7]	2007	Increased 1st, 2nd stage with epidural
Kukulu et al[8]	2008	Increased 1st, 2nd stage with epidural
Mousa et al[9]	2012	No effect on 1st, 2nd stage with epidural
Hasegawa et al[10]	2013	Increased 1st, 2nd stage with epidural
Present study	**2013**	**Increased 1st, 2nd stage with epidural**

Despite complete pain relief with minimum effect on mother and foetus, it remained a centre stage for a debate among anaesthesiologists, obstetric care providers, hospital administration and policy makers because of its possibility to increase the incidence of caesarean and instrumentally assisted deliveries.

Table 5: Effect of epidural vs parenteral analgesia on outcome of labour

Author	Year	Observation
Wong et al[5]	2005	No difference in CS rate
Shahram et al[6]	2006	No difference in incidence of instrumental delivery and CS rate with epidural
Ching-Chung Liang et al[7]	2007	Significant increase in the CS rate and instrumental delivery with epidural
Kukulu et al[8]	2008	No difference in CS rate
Hasegawa et al[10]	2013	Significant increase in the CS rate and instrumental delivery with epidural
Present study	**2013**	**High incidence of instrument assisted delivery but no difference in CS rate.**

John Studd[11] studied the cervicographic outcome of 292 primigravid labours out of which 68 patients received epidural analgesia. Out of 68, 20 patients delivered to the left of action line in the partogram and 48 patients delivered to the right of action line. Hence, with this study it was concluded that under epidural analgesia, the no. of patients delivering to the right of action line was more and required some or the other intervention in the form of either instrumentation or caesarean section. In the present study, partograms were plotted for patients in both the groups. 54/94 (57.4%) patients in the epidural group and 64/92 (69.6%) patients in the control group delivered to the left of action line in the partogram. Whereas, 40/94 (42.6%) patients in the epidural group and 28/92 (30.4%) patients in the control group delivered to the right of action line. Thus, in our study also, the number of patients delivering to the right of action line were more in epidural group as compared to the control group but the difference was not significant statistically ($p > 0.05$).

No consistent differences have been identified in neonatal arterial pH or APGAR scores in babies who are born to mothers with epidurals. Some studies report benefits for the neonate, including a reduction in the incidence of low APGAR scores at 5 min and in the need for NICU admissions. Other workers have reported transient alterations in the foetal heart rate, particularly bradycardias, after initiation of epidural analgesia[12]. In our study,the difference between the rate of admission in NICU was not significant statistically.
Epidural analgesia provided clearly superior pain relief. There is no study in which patient comfort in the opioid group equalled or surpassed the comfort of patients in the epidural group. Intermittent nurse-administered opioids provided no measurable analgesia, as assessed by before-and-after visual analogue pain scores. Patient-controlled administration of intravenous opioids provides some comfort; however, patients receiving epidural analgesia were still more comfortable.

Conclusion:

In conclusion, the findings of present study show that epidural analgesia is associated with an increased incidence of prolonged labour and instrumental delivery but it is not related to increased incidence of caesarean sections. There was no impact on the neonatal outcome also with epidural analgesia.

Therefore, significant increase in the rate of instrumental delivery and increase in the duration of labour need to be considered when counselling women regarding epidural analgesia. It is possible that adjustments in epidural and obstetric care may minimise this effect, requiring a team approach to the management of labour under epidural analgesia.
Current interest in obstetric analgesia is focussing on refined epidural techniques or on the use of alternative local anaesthetic/opiate mixtures. Evaluations of new interventions should be scientific, and should include an assessment of maternal satisfaction and postnatal follow-up.

Bibliography:

1. Meidi MS, Marx GF and Bassell GM. History of pain relief in obstetrics. North Holland : Elsevier, 1980, pp. 1-20.
2. D.H.Mosby, Chestnut. History of Obstetric Anaesthesia. 1999.
3. G., Shneider Sol M. and Levinson. s.l. : Williama and Wilkins, Regional anaesthesia for labour and delivery. 1993, Anaesthesia for Obstetrics, pp. 135-153.
4. Wendy et al. Hyperbaric Bupivacaine 2.5mg prolongs analgesia compared to plain bupivacaine when added to intrathecal Fentanyl 25 mcg in advanced labour. 2003, Anaesthesia and Analgesia, Vol. 97, pp. 873-877.
5. Wong CA, Scavone BM, Peaceman AM, et al. The risk of caesarean delivery with neuraxial analgesia given early versus late in labour. 352, 2005, New England Journal of Medicine, Vol. 17, pp. 655-65.
6. Nafisi, Shahram. Effects of epidural lidocaine analgesia on labour and delivery: A randomised prospective controlled trial. 15, 2006, BMC Anaesthesiology, Vol. 6, pp. 1-6.
7. Ching - Chung Liang, MD and Shu-Yam Wong, MD, Yao- Lung Chang, MD, et al. Does intrapartum epidural analgesia affect nulliparous labour and postpartum urinary incontinence? 2007, Chang Gung Med J, Vol. 30, pp. 161-7.
8. Kamile Kukulu MS, RN, Kafize Demirok, MS, et al. Effects of epidural anaesthesia on labour progress. 1, 2008, Vol. 9, pp. 10-6.
9. Wersam Farid Mousa, Roshdi Al- Metwalli and Manal Mostafa. Epidural analgesia during labour versus no analgesia- A comparative study. 1, Jan-March 2012, Saudi J Anaesthesia, Vol. 6, pp. 36-40.

10. Junichi Hasegawa, Antonio Farina, Giovanni Turchi, Yuko Hasegawa, Margherita Zanello, Simonetta Baroncini. Effects of epidural analgesia on labour length, instrumental delivery, and neonatal short- term outcome. February 2013, Journal of Anaesthesia, pp. 43-47.
11. Meir, Robert K. Griggle and Studd C. Epidurals and caesarean rates. 2, August 1991, Vol. 78. 1979, Br J Clinic Pract, Vol. 33, pp. 287-288.
12. Elizabeth McGrady, Kerry Litchfield. Epidural analgesia in labour.2004, Critical care and pain, Vol. 4, pp. 114-117.