WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 6, Issue 13, 788-802. Research Article ISSN 2277– 7105

EFFECT OF EPIDURAL ANALGESIA ON MODE OF DELIVERY AND PERINATAL OUTCOME

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Article Received on
22 August 2017,

Revised on 14 Sept. 2017,
Accepted on 05 Oct. 2017

DOI: 10.20959/wjpr201713-9860

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ABSTRACT

Introduction: Spontaneous expulsion of single full term (37-42 completed weeks of pregnancy) alive foetus through the natural passages (birth canal) with presenting part vertex, within the reasonable time, without foetal or maternal complications. Childbirth is the most memorable experiences for women. But at the same time associated with excruciating pain making the women crying for from her soul. Pain relief alone is an adequate medical indication for administration of epidural analgesia during labour. **Aim**: My study aims to assess the effect of epidural analgesia on mode of delivery and perinatal outcome. **Objective**: 1) To compare the mode of delivery and rate of operative delivery in parturients with or without epidural analgesia.2To compare NICU admissions following delivery between both the groups. 3) To study the maternal complications and side effect of the procedure. **Material and Methods**: The present study was conducted in department of obstetric and Gynaecology at Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha over a period of two years,Study Design -Observational study, PARTICIPANTS-100 pregnant women attending antenatal clinic who fulfill the inclusion criteria will be offered option of epidural analgesia. Group A consist of 50 parturients who was willing for epidural analgesia after written informed consent and Group B will consist of 50 parturients who was not opt for epidural analgesia. **Conclusions:** Mode of delivery are

similar in both the groups,Duration of 1st stage significantly decreased in epidural,2nd stage needed assistance in the form of vaccum application but non significant difference, Neonatal outcome is same.

KEYWORD: Labour, Epidural, Pregnant.

INTRODUCTION

The process of childbirth is one of the most sacred events in a woman's life. This, nevertheless, is a rather painful procedure. The pain experienced by a woman during childbirth is often underrated by the society. For most women, the pain is comparable to that of pain because of cancer and the amputation of a digit.[1] The process of parturition, is most commonly clouded by the fear, which is almost surely a negative power that touches on the experience. Pain being a necessary evil has been a thought up for debate and methods to mitigate pain are commonly fitted with several enemies from the social, religious and philosophical fronts.The American College of Obstetricians and Gynecologists and the American Society of Anesthesiologists have collectively been of the opinion that"there is no other circumstance where it is considered acceptable for a person to experience severe pain, amenable to safeintervention, while under a physician's care.[2] Attempts of relieving labor pain dates back centuries and various pharmacological and non-pharmacological methods have been resorted for the same. Considering the fact that childbirth is a multi-dimensional experience, a balance between pain relief and other aspects like physical, emotional, psychological, and religious considerations must be maintained. Before the discovery of anesthetic drugs, primitive methods focused on distraction to ease pain. With the increased knowledge on the effects of analgesics, their use in obstetrics became greater than it was before.Contemporary methods of pain relief include epidural analgesia, which refers to local anesthetics and adjuvants injected into the epidural space, spinal anesthesia, which refers to local anesthetic, with or without adjuvants, injected into the subarachnoid space and combined spinal–epidural analgesia which includes analgesia initiated with an intrathecal injection and placement of an epidural catheter to provide a route for additional drugs. Neuraxial analgesia includes spinal, epidural, and combined spinal–epidural analgesia.[3] The introduction of epidural or regional anesthesia meets the objective of providing relief from the suffering and the pain of labor and delivery, while minimizing effects on maternal safety, awareness, motor functions, progress of labor and fetal well being. For a few decades ago, from the time of usage of regional anesthesia for pain relief in labor, controversy has

persisted about its effect on the labor process and its effects on the neonate.[4-11] To disentangle the controversy, the rate of operative delivery amongst patients with and without epidural analgesia has been compared in this study. The foetal outcome amongst both groups has been compared by evaluating APGAR scores and NICU admissions.

MATERIAL AND METHODS

Setting: The present study was conducted in Department of Obstetrics and Gynaecology at Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha over a period of two years extending from September 2015 to August 2017 on 100 pregnant women with full term pregnancy attending antenatal clinic.

1. Study type – Observational study.
2. Study sample- total 100, including 50 cases in GROUP A and 50 control in GROUP B

• GROUP A: Willing for epidural analgesia.

• Group B: Not willing for epidural analgesia with 50 patient in each group.

Inclusion Criteria

1) Anygravida.
2) Age- 20 – 35 years.
3) Body wt<80 kg.
4) Pog- 36- 42 weeks.
5) Singleton pregnancy.
6) Vertex presenting part.
7) Cx> 4 cm dilated.

Exclusion Criteria

1) Ga- < 36 weeks> 42 weeks.
2) Age <20 > 35.
3) Cephalopelvic disproportion.
4) Malpresentations.
5) Cx dilation < 4 cm.
6) c/I – epidural analgesia – spinal deformities, local site infections, bleeding abnormalies.
7) medical complications – pre eclampsia, eclampsia.
8) abnormal fetal heart rate tracing.
9) not opting for epidural analgesia.

METHODOLOGY

PROCEDURE-A complete relevant history was obtained and a thorough clinical examination was done by the team of obstetricians and anesthetists. An informed written consent was taken from parturient and relatives who were willing for epidural analgesia. Whole of the procedure was explained to them including its advantages and disadvantages.

In the epidural group (GROUP A), the epidural was started immediately following the women's request, and when cervical dilatation was of 4-5cm. In the non epidural group (GROUP B) patient is for spontaneous delivery. Routine investigations along with coagulation profile was obtained and noted. Anesthetists were informed and insertion of epidural catheter was done by them. Baseline parameters heart rate, blood pressure, SpO2 and FHR were recorded. Lignocaine sensitivity test was done. Intravenous access was achieved with 18G Intravenous cannula. Preloading was done with ringer lactate solution 10ml/kg. With patient in sitting position, her back was cleaned, painted and draped, to achieve and maintain asepsis. A 2mL 2% solution of lignocaine was injected locally in L3-4 space into the skin and subcutaneous tissue. An 18G epidural needle was advanced up to interspinous ligament. A 10cc loss of resistance syringe with 2mL of air in it was attached at the hub of the needle after removing the stylet. The needle was then advanced slowly until loss of resistance felt. Epidural space was confirmed with hanging drop technique. An 18G epidural catheter was threaded through the needle and secured in the epidural space with 3-5cms of length into the epidural space. Following this, needle was removed and catheter strapped firmly to the back of the patient with an adhesive tape. Distal end of the catheter was covered with a sterile gauge piece and a cover. During this whole procedure care was taken not to advance either the needle or the catheter during contractions as there is maximum chances of piercing the dura or the blood vessel.

OBESRVATIONS AND RESULTS

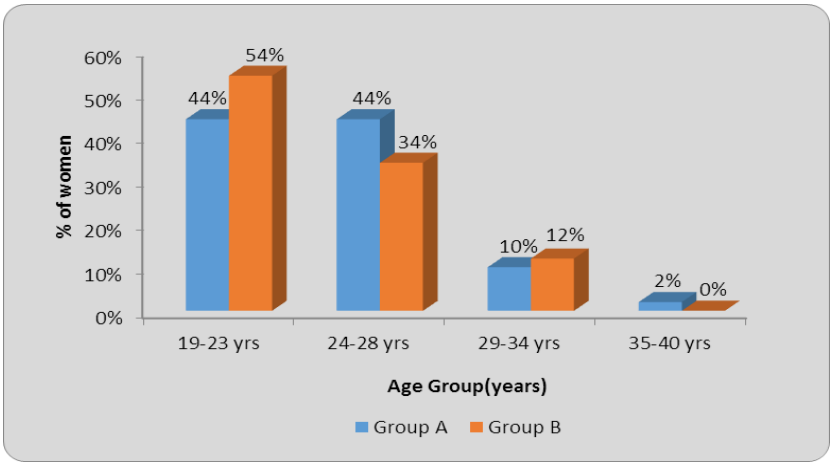
This Observational study was conducted in the Department of Obstetrics and Gynecology, Acharya Vinobha Bhave Rural Hospital, Sawangi, Wardha. The study was aimed to find out the EFFECT OF EPIDURAL ANALGESIA on mode of delivery and perinatal outcome in women, who are opting for epidural anaesthesia in comparision to women without any pain reliving modality. A total of 100 women fulfilling the inclusion criteria were enrolled in the study. They were divided into Group A and Group B with 50 women. Demographics of both the groups were comparable. Statistical analysis was done on the data obtained by using

descriptive and inferential statistics using Chisquare test, Student's paired t-test and Student's unpaired t test and the softwares used in the analysis were SPSS 22.0 version, GraphPad Prism 6.0 version and EPI-INFO 6.0 version. Throught the results, $p<0.05$ is considered as level of significance.

Table. 1: Distribution of women according to their age(yrs) in both the groups.

Age Group(yrs)	Group A	Group B	ϰ2-value
19-23 yrs	22(44%)	27(54%)	2.24 p=0.52,NS
24-28 yrs	22(44%)	17(34%)	
29-34 yrs	5(10%)	6(12%)	
35-40 yrs	1(2%)	0(0%)	
Total	50(100%)	50(100%)	
Mean ± SD	24.36±3.27	23.98±3.32	
Range	20-35	20-31	

Table 1 Shows the distribution of women by age in both the groups. The mean age in group A was 24.36±3.27 and in group B was 23.98±3.32. The 'p' value was not <0.05 it was not statistically significant.

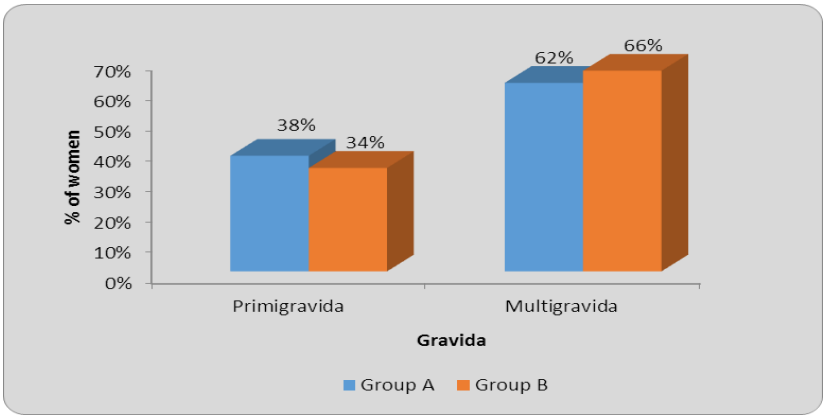


Graph. 1: Distribution of women according to their age(yrs) in both the groups.

Table. 2: Distribution of women according to their gravida in both the groups.

Gravida	Group A	Group B	ϰ2-value
Primigravida	19(38%)	17(34%)	0.17 p=0.67,NS
Multigravida	31(62%)	33(66%)	
Total	50(100%)	50(100%)	

Table 2 shows the distribution of women according to their gravida. In Group A 38% were primigravida and 62% were multigravida unlike Group B where 34% primigravida and 66%multigravida. This makes the 'p' value statistically non significant.

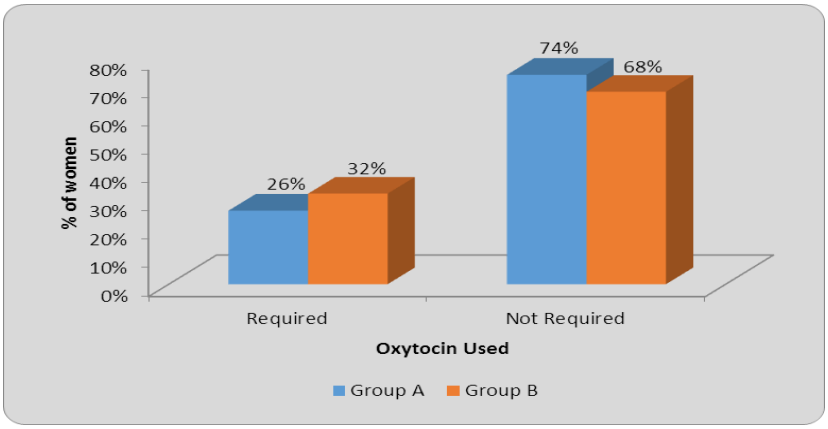


Graph. 2: Distribution of women according to their gravida in both the groups.

Table. 3: Distribution of women according to their oxytocin used in both the groups.

Oxytocin used	Group A	Group B	א2-value
Required	13(26%)	16(32%)	0.43 p=0.50,NS
Not Required	37(74%)	34(68%)	
Total	50(100%)	50(100%)	

Table 3 shows the distribution of women according to oxytocin used in both the groups. The values in Group A and B are comparable. The 'p' value was not significant as it was 0.50.



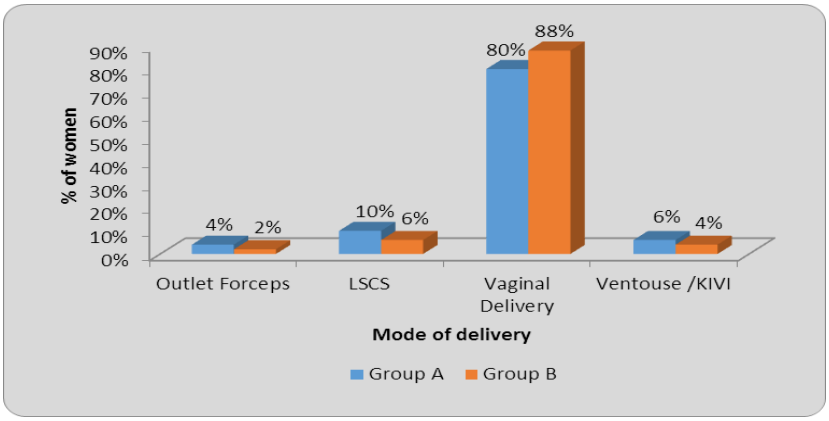
Graph. 3: Distribution of women according to their oxytocin used in both the groups.

Table. 4: Distribution of women according to their mode of delivery in both the groups.

Mode of delivery	Group A	Group B	א2-value
Outlet Forceps	2(4%)	1(2%)	1.22 p=0.72,NS
LSCS	5(10%)	3(6%)	
Vaginal Delivery	40(80%)	44(88%)	
Ventouse /KIVI	3(6%)	2(4%)	
Total	50(100%)	50(100%)	

Table 4 shows the distribution of women according to their mode of delivery in both the groups. The majority in both groups underwent vaginal delivery i.e 40% and 44% in Group A

and B respectively. In Group A 4% underwent forceps delivery and 10% underwent LSCS, In Group B 2% underwent Forceps and 6% underwent LSCS. The 'p' value was not significant (0.76).

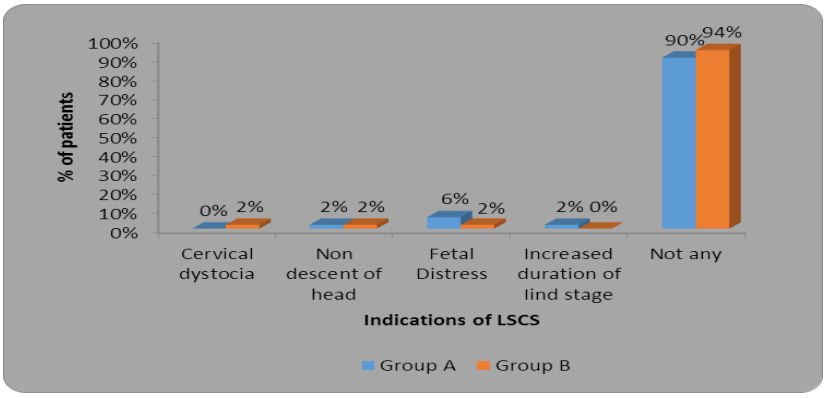


Graph. 4: Distribution of women according to their mode of delivery in both the groups.

Table. 5: Distribution of women according to their indications of LSCS in both the groups.

Indications of LSCS	Group A	Group B	⨯2-value
Cervical dystocia	0(0%)	1(2%)	2.96 p=0.56,NS
Non descent of head	1(2%)	1(2%)	
Fetal Distress	3(6%)	1(2%)	
Increased duration of 2 nd stage	1(2%)	0(0%)	
Not any	45(90%)	47(94%)	
Total	50(100%)	50(100%)	

Table 5 shows the distribution of wmen according their indication for LSCS. In Group A and B, 90% and 94% did not undergo LSCS. Fetal Distress was the more common indication for LSCS in both groups. The 'p' value is not significant for this parameter.

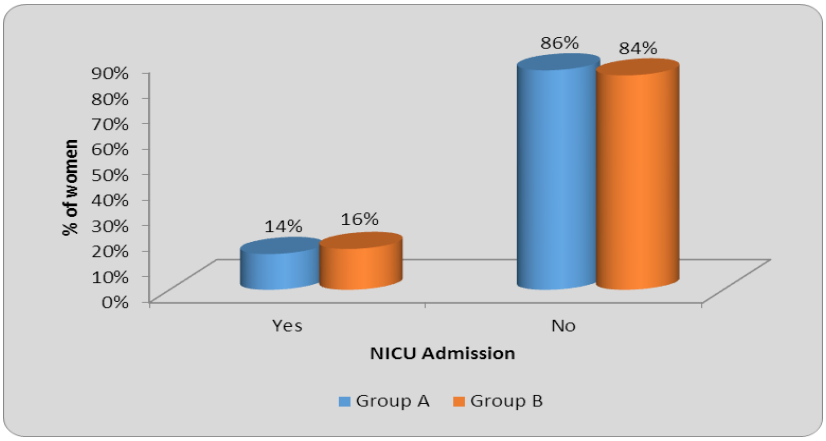


Graph. 5: Distribution of women according to their indications of LSCS in both the groups.

Table. 6: Distribution of neonate according to NICU admissions in group A and group B.

NICU Admission	Group A	Group B	ϰ2-value
Yes	7(14%)	8(16%)	0.07 p=0.77,NS
No	43(86%)	42(84%)	
Total	50(100%)	50(100%)	

Table 6 shows the distribution of women according to NICU admissions in both Group A and B. The values in both groups are comparable. The 'p' value is 0.77 and is statistically not significant.



Graph. 6: Distribution of women according to NICU admissions in group A and group B.

Table. 7: Distribution of women according to their maternal satisfaction in terms of pain relief.

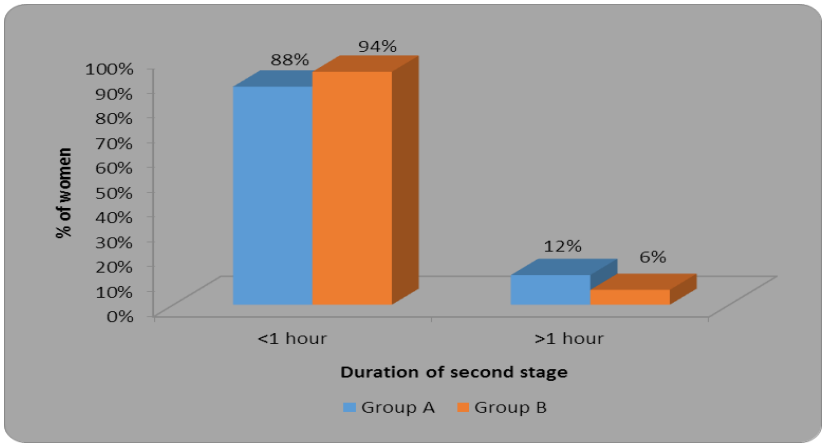
Maternal Satisfaction	No of women	Percentage
Poor	5	10
Good	5	10
Excellent	40	80
Total	50	100

Table 7 Shows the distribution of women according to the maternal satisfaction. Eighty percent of Group A show 'excellent' Maternal Satisfaction.

Graph. 7: Distribution of women according to their maternal satisfaction in both the groups.

Table. 8: Distribution of women according to duration of second stage in group A and group B.

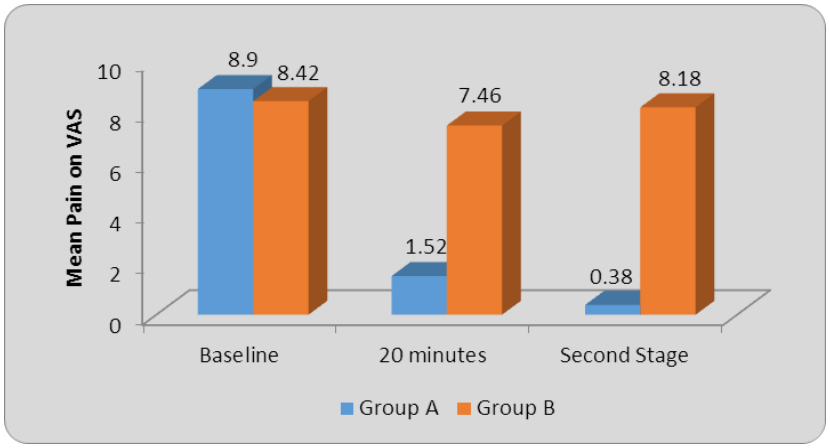
Duration of 2nd stage	Group A	Group B	ϰ2-value
<1 hour	44(88%)	47(94%)	1.09 p=0.29,NS
>1 hour	6(12%)	3(6%)	
Total	50(100%)	50(100%)	
Mean ±SD	0.38±1.22	8.18±0.48	



Graph. 8: Distribution of women according to duration of second stage in group A and group B.

Table. 9: Comparison of VAS score in two groups Student's unpaired t test.

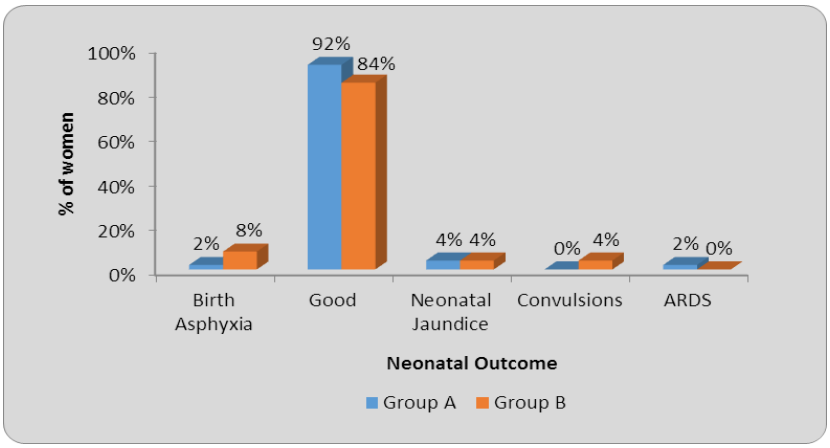
	Group	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
Baseline	Group A	50	8.90	0.41	0.05	5.22	0.0001,S
	Group B	50	8.42	0.49	0.07		
20 minutes	Group A	50	1.52	1.07	0.15	33.97	0.0001,S
	Group B	50	7.46	0.61	0.08		
Second Stage	Group A	50	0.38	1.22	0.17	41.83	0.0001,S
	Group B	50	8.18	0.48	0.06		



Graph. 9: Comparison of VAS score in two groups.

Table. 10: Distribution of women according to neonatal outcome in group A and group B.

Neonatal Outcome	Group A	Group B	א2-value
Birth Asphyxia	1(2%)	4(8%)	4.98 p=0.28,NS
Good	46(92%)	42(84%)	
Neonatal Jaundice	2(4%)	2(4%)	
Convulsions	0(0%)	2(4%)	
ARDS	1(2%)	0(0%)	
Total	50(100%)	50(100%)	



Graph. 10: Distribution of women according to neonatal outcome in group A and group B.

DISCUSSION

The present study was conducted in the Department of Obstetrics and Gynaecology, Acharya Vinoba Bhave Rural Hospital, Jawaharlal Nehru Medical College Sawangi, Meghe, Wardha to study the effect of epidural analgesia on Mode of delivery and perinatal outcome and compare it with no analgesia in labour.

A total of 100 women fulfilling the inclusion criteria were enrolled in the study. Out of which 50 parturients were given epidural analgesia after consent and 50 were devoid of analgesia. Demographics of both the groups were comparable. Theobservations of this study have been discussed and compared with other studies.

The mean age of women in the study group was 24.36±3.27 years against a mean of 23.98± 3.32 years in the control group which was comparable to the study done by Desai Pet al[12] where mean age was 24.97±3.90 years in epidural group and 25.18±4.08 years in control group. Study done by Paddalwar et al[13] in which mean age was 23.30 in the epidural group. The mean age in study done by Gambling et al[14] was 32.7 ± 0.74 years in PCEA group Fact that later study was carried out in a western country where ag at marriage and childbearing is higher compared to our country could be understood in difference in age group.

-In our study parity status and their distribution among the population was also studied which showed 19(38%) primigravida and 31(62%) multigravida in group A and in group B primigravida17 (34%) and multigravida 33(66%). Thus the numbers of patients demanding epidural analgesia were more multigravida as compared to primigravida. During first pregnancy,the woman have a lot of pain and because of that pain during her second of later pregnancy she does not have any more energy to bear the same pain again and thus, she chooses epidural delivery.[15,16]

Primigravida are believed to be keener to opt for painless labour due to anxiety and fear about the perception of pain as pain scores are significantly higher for the primigravida than for the multigravida. (Melzack et al).[17]

In present study second stage was prolonged in 6(12%) patients in Group A which was comparable to Group B where duration of second stage was prolonged in 3(6%) patients. According to Halpern et al[18] and Leighton et al[19] the second stage is more constantly prolonged as compared to first stage. This claimed association has long been attributed to motor blockade with concomitant weakness of pelvic floor muscles that reduces the effective maternal pushing and the involuntary bearing down reflex Conversely, Khan M et al[20] found that the duration of both first and second stages of labour was reduced significantly when compared to those not given epidural analgesia which demonstrate that epidural analgesia may accelerate labour. The explanation for this may be that provision of effective analgesia reduces maternal catecholamines, and hence minimizing its inhibitory effect on uterine

contractility or the fact that epidural analgesia improves both the strength and frequency of uterine contractions thereby making them more co-ordinated.

-Randomized, prospective studies have produced contrasting findings regarding the effects of epidural analgesia on mode of delivery. Controversy remains as to whether epidural analgesia predisposes parturients to a greater risk of caesarean delivery for dystocia. In present study, the cesarean delivery as well as instrumental delivery rates was not stastical significant between both the groups. 2(4%) patients delivered by outlet forceps in Group A and and 1(2%) in Group B. 5(10%) patients in Group A and 3(6%) % in Group B delivered with cesarean section.

In group A 2 patients had outlet forceps delivery which was performed due to fetal bradycardia, 3 patient had ventouse delivery out of which one because of prolonged second stage, another because of patients had failure to bear down,And last was because of fetal heart rate variations. 3 patient had cesarean section for fetal distress. While in1 patients cesarean section was done for increased duration of second stage. and 1 patient for non decent of head.

While in Group B 1 outlet forceps delivery was performed in due to fetal distress, 2 patients had ventouse delivery due to prolonged second stage and another because of fetal heart rate variations. one patient had cesarean section for cervical dystocia. While in 2 patients, cesarean section was done for prolonged second stage of labour.

A Cochrane review[21] of 20 trials involving a total of 6534 women estimated that the relative risk of cesarean delivery with epidural analgesia as compared with other methods or with no analgesia was 1.07 (95% confidence interval, 0.93 to 1.23) which means no evidence of a significant difference in the risk of cesarean section. However it was associated with an increased risk of instrumental delivery.

-In our study only one patients reported intrapartum hypotension in present study which was corrected by intravenous administration of fluids and left lateral position one patient in present study had shivering and one had significant nausea and vomiting. Shahida parveen et al[22] reported shivering in 36% of the patients.

Women's satisfaction with epidural analgesia is correspondingly high in various studies. In present study 80% of women had excellent satisfaction.

Number of studies have proved that epidural analgesia offers superior pain relief as compared to other forms of pharmacological or non-pharmacological methods. In a study done by Sharma et al (23)involving 2703 nulliparous women, 95% of women in epidural group reported their satisfaction as excellent.

In present study,majority of the patients belong to rural areas and due to lack of education, lack of awareness, fear of delivery complications and their desire to deliver without suffering from labour pains low socioeconomic stratum of society were levelof acceptance was found.some of the parturient was reluctanat to have epidural analgesia because of their fears about adverse effects of drug on foetus, developing back pain and paralysis. factors such as the womans involvement in decision making, social and cultural factors, the woman's relationship with her caregivers, and her expectations regarding labour may be equally, if not more, are important in opting for epidural analgesia Giving proper and full information about epidural analgesia would surely improve the acceptance level among the parturients would create awarenss.Good communication and a team effer are neede to reap the benefits of pain free labour, while minimizing the potential effect of epidural analgesia on labour outcome.

CONCLUSION AND RECOMMENDATIONS

Use of Epidural analgesia is controversial since so long, one of the factor for low popularity amongst patient is apprehension increases regarding instrument and operative delivery.

With above results we recommend and conclude thatEpidural analgesia in group A patient had similar results like prolong labour, not increase in the rate of Cesarean deliveries, instrumental vaginal deliveries, and other adverse effects in labouring women compared with group B. Furthermore, it was associated with shorter duration of the first stage of labour and was clearly preferred by the women.

BIBLIOGRAPHY

1. Melzack R. The short-form McGill pain questionnaire. Pain, 1987 Aug 1; 30(2): 191–7.
2. ACOG Committee Opinion #295: pain relief during labor. Obstet Gynecol, 2004 Jul; 104(1): 213.

3. Landau R, Yentis S. Maternal–fetal conflicts: Cesarean delivery on maternal request. Clinical Ethics in Anesthesiology: A Case-Based Textbook, 2010 Oct 28: 49.
4. Wong CA, Scavone BM, Peaceman AM, McCarthy RJ, Sullivan JT, Diaz NT, Yaghmour E, Marcus RJ, Sherwani SS, Sproviero MT, Yilmaz M. The risk of cesarean delivery with neuraxial analgesia given early versus late in labor. New England Journal of Medicine, 2005 Feb 17; 352(7): 655-65.
5. Thorp JA, Hu DH, Albin RM, McNitt J, Meyer BA, Cohen GR, Yeast JD. The effect of intrapartum epidural analgesia on nulliparous labor: a randomized, controlled, prospective trial. American journal of obstetrics and gynecology, 1993 Oct 1; 169(4): 851-8.
6. Chestnut DH, Vincent Jr RD, McGrath JM, Choi WW, Bates JN. Does early administration of epidural analgesia affect obstetric outcome in nulliparous women who are receiving intravenous oxytocin?. Anesthesiology, 1994 Jun; 80(6): 1193-200.
7. Chestnut DH, McGrath JM, Vincent Jr RD, Penning DH, Choi WW, Bates JN, McFarlane C. Does early administration of epidural analgesia affect obstetric outcome in nulliparous women who are in spontaneous labor?. Anesthesiology, 1994 Jun; 80(6): 1201-8.
8. Luxman D, Wolman I, Groutz A, Cohen JR, Lottan M, Pauzner D, David MP. The effect of early epidural block administration on the progression and outcome of labor. International journal of obstetric anesthesia. 1998 Jul 1; 7(3): 161-4.
9. Lieberman E, Lang JM, Cohen A, D'agostino R, Datta S, Frigoletto FD. Association of epidural analgesia with cesarean delivery in nulliparas. Obstetrics & Gynecology. 1996 Dec 1; 88(6): 993-1000.
10. Fung BK. Continuous epidural analgesia for painless labor does not increase the incidence of cesarean delivery. Acta anaesthesiologica Sinica. 2000 Jun; 38(2): 79-84.
11. Lee HL, Lo LM, Chou CC, Chiang TY, Chuah EC. Timing of initiating epidural analgesia and mode of delivery in nulliparas: a retrospective experience using ropivacaine. Chang Gung Med J. 2008 Jul; 31(4): 395-401.
12. Desai P, Patel P, Gupta A, Virk GK, Sinha A. Epidural analgesia in labor. J Obstet Gynaecol India, 2006; 56(5): 417-22.
13. Paddalwar S, Nagrale M, Chandak A, Shrivastava D, Papalkar J. A randomized, double-blind, controlled study comparing Bupivacaine 0.125% and Ropivacaine 0.125%, both with Fentanyl 2 μg/ml, for labor epidural analgesia. Indian Journal of Pain. 2013 Sep 1; 27(3): 147.

14. Gambling DR, McMorland GH, Yu P, Laszlo C. Comparison of Patient-Controlled Epidural Analgesia and Conventional Intermittent "Top-Up" Injections During Labor. Anesth Analg. 1990 Mar; 70(3): 256.
15. Shidhaye RV, Galande MV, Bangal VB, Joshi SS, Shidhaye UR. Awareness and attitude towards labour analgesia of Indian pregnant women. Anaesth Pain & Intensive Care. 2012; 16(2): 131-6.
16. MaryA.J. Perinat Educ 2003; Spring 12(2): 16- 21.
17. Leighton BL, Halpern SH. Epidural analgesia and the progress of labor. Evidence-based obstetric anesthesia. 2005 Aug 12; 10-22.
18. Leighton BL, Halpern SH. The effects of epidural analgesia on labor, maternal, and neonatal outcomes: A systematic review. Am J Obstet Gynecol, 2002 May 1; 186 (5, Supplement): S69–77.
19. Khan MA, Yasin B, Zaffar M, Rehman S. Epidural analgesia; effect on the duration of labor. Prof Med J., 2008; 15: 101-3.
20. Anim-Somuah M, Smyth R, Howell C. Epidural versus non-epidural or no analgesia in labour. Cochrane Database Syst Rev., 2005 Jan 1; 4(6).
21. Sharma SK, McIntire DD, Wiley J, Leveno KJ. Labor Analgesia and Cesarean DeliveryAn Individual Patient Meta-analysis of Nulliparous Women. The Journal of the American Society of Anesthesiologists, 2004 Jan 1; 100(1): 142-8.
22. Shahida Parween. Epidural analgesia in labour. Professional Med J., 2006 Sep; 13(3): 396-402.