ORIGINAL ARTICLE

Epidural Analgesia in High Risk Patients During Labour

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Abstract

In this prospective observational study, 28 high risk patients were analyzed after giving epidural analgesia (EA) for labor pain relief over a period of 3 years. 5 cc Bupivacaine (0.125%) + 1 cc Fentanyl (10 mcg) were given and the maternal pain relief and fetal outcome were analyzed. Onset time of analgesia and level of analgesia was assessed by pin prick method.21 patients were primigravidae. 15 patients had a single risk factor while 13 patients had 2 risk factors affecting simultaneously. Pregnancy Induced Hypertension (PIH) was the commonest high risk condition occurring in 20 patients. Average analgesia onset time was 7.8 minutes. Analgesia lasted for > 2 hrs after administration of first dose in 23 patients. Rate of LSCS was 7.1% (2 patients) and instrumental delivery was 14.2 % (4 patients). 24 babies had an Apgar score of >/= 7. Complete pain relief was observed in 10 patients while 16 had moderate, 1 had slight and 1 had no pain relief. No major maternal or fetal complications were reported. EA is a very safe and effective form of analgesia in the interest of maternal and fetal welfare not only in normal pregnant gravidas, but also in high risk patients.

Key Words

Edidural Analgesia, Lobour, Analgesia

Introduction

Analgesia for pain relief in labor and delivery remained unaccepted for centuries. But now it is widely accepted that in absence of contraindications a request for pain relief by the woman in labor is sufficient medical indication for obstetrical analgesia. Use of parenteral opioids for labor analgesia is very well documented and is popular (1). EA is shown to have better patient satisfaction and fetal outcome than parenteral opioid analgesia. Though it is technically a difficult procedure requiring skilled personal and close supervision, it affords significant advantages not only in normal but also in high risk patients and has become standard of care. To highlight this fact, a study of 28 high risk obstetric patients was done. By proper titration of dosage, pain is abolished and motor activity was maintained with decrease in the side effects.

Material and Methods

A study of 28 high risk women was carried out. Patients who presented in the active phase of labor (cervix >/= 3 cm dilated) with full term pregnancy having at least 1 high risk factor such as PIH, twins, anemia, breech, cardiac disease, Diabetes Mellitus (DM), previous CS, borderline Cephalo-Pelvic Disproportion (CPD), postdatism, oligohydramnios and Rh- negative were included in the study. Patients with fixed cardiac output state, neurological disease, previous spinal surgery, bleeding disorder, patients on anticoagulant therapy, sepsis at the site of injection, and those who were unwilling for the procedure, were excluded from the study. Detailed history was taken, general, systemic and obstetric examination was done. A written consent of the patient and her relatives was taken after thorough explanation of the procedure. Hematological investigations included complete blood count, coagulation profile (bleeding time and clotting time). Also, a blood sample was sent to blood bank for blood grouping and cross matching. Quantification of pain was done using the '7 Faces' rating scale for illiterate and Visual Analogue Scale (VAS) for literate patients. Epidural catheter number 16 or 18 was inserted in the left lateral position in the operation theater in L 2-3 or L 3-4 spaces. Loss of resistance to fluid technique

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was used in all cases. Catheter was inserted in the cephalad direction. After fixing catheter patient was shifted to the labor room. First dose of 5cc Bupivacaine 0.125% plus 1cc Fentanyl 10 mcg was given. Level of and onset of analgesia was noted by pin prick method. Careful monitoring of pulse, blood pressure, uterine contractions and Fetal Heart Sound (FHS) was done. Low Artificial Rupture of Membranes (ARM) and oxytocin drip were used whenever required in some patients. Top up dose (5cc Bupivacaine 0.125% + 1cc Fentanyl 10 mcg) was given when patient started feeling pain. Mother's opinion for pain relief on the same day was taken. Newborn assessment with Apgar score was done. Epidural catheter was removed after 6 to 8 hours of delivery. Mode of delivery whether normal, instrumental or operative was studied. Total duration of analgesia and any complication to the patient was observed. The patient and her newborn were observed for two days.

Results

28 patients with at least one high risk factor were given EA. Study results were analyzed with respect to various parameters.18 women (64.2%) were in the age group of 21 to 25 years. None of the patients was morbidly obese. One of the patients was having a BMI of 31. So, none of the patients required any alteration in the dose. 19 patients (67.8%) were educated up to at least 8th standard which made it relatively easy to determine the pain relief score. 21 patients (75%) were nulliparous, and 7 were multiparous. 15 patients had only one risk factor while the other 13 patients had 2 risk factors affecting simultaneously. In all, 20 (71.4%) patients has PIH, 7 had postdatism, 5 patients had anemia, 2 had Oligohydramnios, 2 has previous cesarean section and 2 had borderline CPD. 1 patient had a twin pregnancy, 1 had a breech presentation and 1 patient had Rh – incompatibility (*Table -1*). Onset time of analgesia after the first dose ranged from 5 to 15 minutes with an average of 7.8 minutes. 14 patients (50%) had an effect lasting for 2 to 3 hours. 9 patients (32%) had an effect lasting for more than 3 hours while 3 patients (10.7%) had an effect only for 1 to 2 hours. In 2 patients duration of analgesia could not be assessed as they underwent LSCS. Duration of labor in nullipara was on an average was 13 hours for the 1st stage, 2 hours 15 minutes for the 2nd stage, and 6 minutes for the 3rd stage. While in parous patients average duration of the 1st stage was 6 hours 15 minutes, 1 hour 33 minutes for the 2nd stage and 4 minutes for the 3rd stage. 2 patients required LSCS (7.1%), while 4 (14.2%) patients needed instrumental delivery (3 forceps and 1 vacuum). According to Oxford pain relief score2-10 patients had complete, 9 had good, 7 had moderate, 1 had slight while 1 had no pain relief (*Table-2*). 3 patients (10.7%) experienced minor complications like nausea, vomiting, headache, and fever with shivering. All the complications settled with conservative management. 5 patients complained of backache. No major life threatening complications occurred. 4 patients had procedure related complications in the form of Dural tap in 1 patient, bloody tap in 2 patients and catheter blockade in 1 patient (*Table -3*). Apgar score at five minutes of birth was >/= 7 (good) in 24 babies (85.7%). In 4 babies (14.2%) Apgar score was between 4 to 6. Meconium Stained Liquor was noted in 3 babies but the babies were healthy and none of the babies expired.

Table 1. Type of High Risk Factor

High risk factor	No of patients
PIH	20
Post datism	7
Anemia	5
Previous LSCS	2
Borderline CPD	2
Oligohydramnios	2
Breech	1
Twin pregnancy	1
Rh – negativity	1

Table 2. Pain Relief Score

Pain relief score (oxford) (2) of patients	No
None	1
Slight	1
Moderate	7
Good	9
Complete	10

Table 3. Complication

	Complication	No of patients
Technique related complications	Dural tap	1
	Bloody tap	2
	Catheter blockage	1
Maternal Complications	Nausea & vomiting	1
	Headache	1
	Backache	5
	Fever & shivering	1
Fetal Complications	Bradycardia	1
	Cyanosis	1
	Meconium stained liquor	3

Discussion

Uterine activity is more dependent on hormonal influences than motor activity. For this reason labor is usually not interfered with low dose of local anesthesia. In this study 28 high risk patients were successfully

administered EA with low dose Bupivacaine + Fentanyl as they act synergistically without any complications. Usually onset time for action of Bupivacaine is long that is 10 to 20 minutes, but on adding Fentanyl there is rapid onset of action. This could explain why in our series the onset of analgesia was very fast as low as 5 minutes in some of the patients with an average of 7.8 minutes.In our study after a single dose majority of the patients had pain relief for 2 to 3 hours. The duration for labor for all stages were within normal limits, but the duration of 1st and 2nd stage of labor was in the upper limit of normal range. These findings are in contrast to a Meta analysis by Leighton *et al* (3) which showed that the 2nd stage of labor was prolonged with EA administration with no change in the 1st stage duration. Zhang *et al* (4) concluded that with administration of EA, duration of the active phase of labor remains unchanged, but the second stage of labor is likely prolonged.

The rate of cesarean section was quite less in the present study. Studies by Leighton *et al* (3) also showed that EA is not associated with an excessive rate of cesarean births. Zhang *et al* (4) reported that EA during labor does not increase the risk of cesarean delivery, nor does it necessarily increase oxytocin use or instrumental delivery caused by dystocia. The incidence of instrumental deliveries in our series was 14.1 %. In a Meta analysis of 37000 women by Segal and co-workers (5) showed that an increase in EA availability had no effect on rate of instrumental or cesarean deliveries. Simmons *et al* (6) in their Cochrane review of 14 trials and 2047 women also reported no difference between CSE and EA with incidence of instrumental delivery, maternal morbidity, cesarean section and admission of babies to the neonatal unit. Apgar score at five minutes was good in 85.7% of babies in our study. Reynolds *et al* (7) in his Meta analysis comparing epidural with systemic opioid analgesia found that fetal base excess at birth which is a better indicator of metabolic acidosis was improved when EA was administered. Lieberman E *et al* (8) reported unintended effects of EA and concluded that Women receiving epidural are more likely to have intra partum fever and their infants are more likely to be evaluated and treated for suspected sepsis. We in our series had only 1 patient who had fever which settled conservatively and the baby had good Apgar score. One baby developed fever on the second day of life but was treated conservatively and discharged on the sixth day.In our study no patients complained of pain in a particular area i.e. unblocked segments. 7% patients reported inadequate pain relief. Le Coq *et al* (9) studied the causes of failure of epidural analgesia in 1009 women and observed that inadequate pain relief during delivery were found in 19.7% of patients. They concluded that the risk factors of inadequate pain relief were inadequate analgesic efficacy of the first dose, posterior presentation and radicular pain during epidural placement. In our study, 1 patient had slight and 1 patient had no pain relief. However, in none of them, any of the above mentioned risk factors were noted and the reason for failure remained unexplained. No major life threatening complications occurred during our study. Anim-Somuah *et al* (10) in their Cochrane database systemic review analyzed twenty-one studies involving 6664 women on EA. No studies reported on rare but potentially serious adverse effects of epidural analgesia in labour. In our series 17.8% patients reported backache, but persistent or chronic backache was uncommon. Also such complications are more with the technique of epidural catheter insertion. Abandonment of the procedure was not required in any of the patients.

Conclusion

The present study though small, but showed encouraging results with the synergistic combination of Bupivacaine and Fentanyl and it shows that it is a very safe and effective form of analgesia in interest of maternal and fetal welfare not only in normal patients but also in high risk patients.

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