

Efficacy of Addition of Dexamethasone with Bupivacaine and Fentanyl for Epidural Pain Relief in Normal Labor

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Abstract

Background: Epidural analgesia for providing Painless normal vaginal deliveries has been developed over the last 20 years, epidural local anaesthetics was the only available option. However, certain drugs were added with the local anaesthetics to improve the quality of analgesia. **Aims:** Evaluation of the efficacy of addition of dexamethasone with bupivacaine and fentanyl for epidural analgesia in labor on onset of action, duration of analgesia and number of top up doses, and to evaluate any possible side effects. **Patient and methods:** The study will be a randomized, double blinded and prospective. The study was conducted on 60 full term parturient women of ASA status I and II of mixed parity who were willing for epidural analgesia during labor. The women included in the study had singleton pregnancy with vertex presentation with cervical dilatation of 3-5 cm and had no contraindication to epidural analgesia. **Group A:** -0.120% bupivacaine with 0.1 mcg fentanyl. **Group B:** -0.120% bupivacaine with 0.1 mcg fentanyl and 4mg Dexamethasone. **Results:** Group A was significantly longer in duration of analgesia (the time from the initial main dose to the first top up dose) (10.3 ± 1.4 min.) than group B (6.9 ± 1.1 min) and group A was also significantly less in numbers of top up doses (1.7 ± 0.4) than group B **conclusions** we concluded that the use of dexamethasone in a dose of (4 mg) as an adjuvant to local anesthetics and fentanyl in epidural analgesia for normal labor provided effective prolongation in duration of sensory block and decrease in number of top up doses.

Key words: dexamethasone, fentanyl, normal labor.

Introduction

Labor is a physiologic process but associated with severest form of pain (Mezlack R. et al., 2003). Various nonpharmacological methods and pharmacological method of providing labor analgesia have been use. Regional analgesia is widely used for providing labor analgesia. Regional techniques present the most flexible effective and least depressant options when compared with parenteral and inhalation techniques (Leighton BL et al., 2002).

The goal of labor analgesia is to provide adequate pain relief without causing any maternal and fetal complications. Continuous epidural analgesia is the most versatile and most commonly employed technique, because it can be used for pain relief during labor (Bucklin BA et al., 2000).

Maternal satisfaction with epidural analgesia by intermittent bolus injection is increased by opioid supplementation and

consequent reduction in local anaesthetic dose (Beilin Y et al., 2010).

Steroids have powerful anti-inflammatory as well as analgesic property. They suppress inflammation through inhibition of phospholipase A2. Local application of methylprednisolone has been found to block transmission in nociceptive C-fibers but not in myelinated A-beta fibers. The effect was reversible, suggesting a direct membrane action of steroids (Shaikh, M. R. et al., 2013)

Patient and methods

The study will be a randomized, double blinded and prospective. The study was conducted on 60 full term parturient women of ASA status I and II of mixed parity who were willing for epidural analgesia during labor. The women included in the study had singleton pregnancy with vertex presentation with cervical dilatation of 3-5 cm and had no contraindication to epidural analgesia.

Group A: -0.120 % bupivacaine with 0. mcg fentanyl.

Group B: -0.120% bupivacaine with 0. mcg fentanyl and 1mg Dexamethasone. The study was started with initial loading bolus 10ml (0.120% bupivacaine with 0. mcg fentanyl and normal saline) in first group or (0.120% bupivacaine with 0. mcg fentanyl and 1mg dexamethasone) in second group. If the mother failed to achieve analgesia (verbal pain score > 3) 20 min after this injection, she was excluded from the study and the epidural catheter was either manipulated or replaced.

Top up injection (1 ml: 0.120% bupivacaine with 0. mcg fentanyl) was started 30 minutes after bolus injection and repeated every 30 minutes until delivery

Results

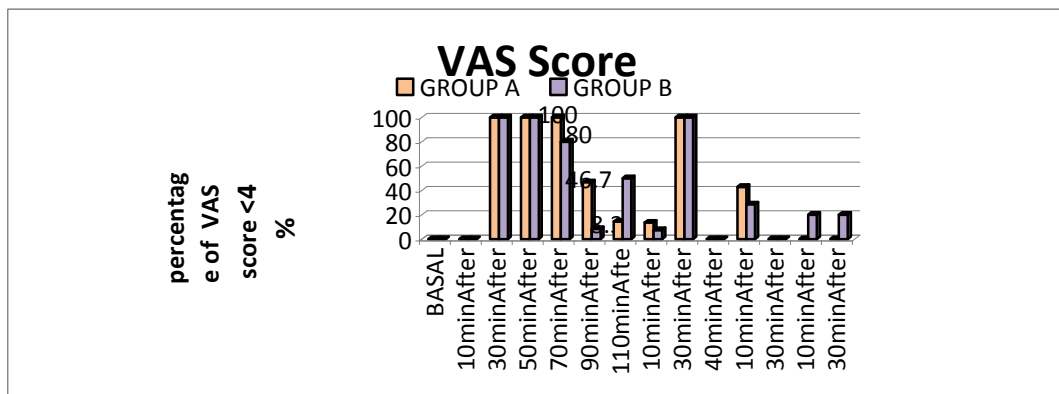
Group A was significantly longer in duration of analgesia (the time from the initial main dose to the first top up dose) (80.3±4.8min.) than groupB (62.9±4.1min.) and group A was also significantly less in numbers of top up doses (1.7±0.4) than group B (2.0±0.4) with no motor block has been occurred in both groups according to Bromage scales.

clinical data	Group A (n=30)	Group B (n=30)	P value
Onset of sensory action (min) Mean ±SD	16.1±3.2	17.±2.9	0.836
Duration of analgesia(min) Mean ±SD	80.3±4.8	62.9±4.1	<0.001*
Numbers of top up doses Mean ±SD	1.7±0.4	2.0±0.4	0.002*

Visual Analogue Score (VAS):

While comparing between the two groups there were statistically insignificant

differences between the two groups in VAS except at 70 min (p value 0.0314) and at 90 min (p value <0.002).



Discussion

The goal of labor analgesia is to provide adequate pain relief without causing any maternal and fetal complications. Continuous epidural analgesia is the most versatile and most commonly employed technique, because it can be used for pain relief during labor (Bucklin et al., 2005).

Local anaesthetic agent provide good pain relief but produce unacceptably dense motor blockade and poor spontaneous delivery rates. However, if opioids and dexamethasone are added, the required concentration of local anaesthetics are reduced while can be continued throughout the second stage without an increase in instrumental deliveries (Halpern and Carvalho, 2009).

We used a dose of 8 mg dexamethasone because administration of this dose seems to be safe in adults. Adverse effects with a single dose of dexamethasone are probably extremely rare and minor in nature and previous studies have demonstrated that short-term (24 hours) use of dexamethasone was safe. (Tan et al, 2001).

Conclusion

From our results, we concluded that the use of dexamethasone in a dose of (8 mg) as an adjuvant to local anesthetics and fentanyl in epidural analgesia for normal labor provided effective prolongation in duration

of sensory block and decrease in number of top up doses.

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