

Tramadol infusion as obstetric analgesia

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Abstract:

Objective: To assess the efficacy and safety of tramadol hydrochloride infusion as an analgesic during labor.

Study design: Prospective open, interventional study.

Place and duration: Gynae and Obstetric Unit II in Abbasi Shaheed Hospital from 1st June 2018 to 30th November 2018.

Material and Methods: This is interventional, non randomized, single arm study which was carried out at Abbasi Shaheed Hospital. The study included 100- primi-gravida with singleton term pregnancy. Dose of 100mg of tramadol hydrochloride intravenous infusion in 1000c.c. normal saline was given during active phase of labor. Degree of pain was assessed by using Wong-Baker FACES pain rating scale. We observed maternal and fetal side effects, duration of labor and mode of delivery. Data analyzed by SPSS version 20 for descriptive statistic and student t-test applied for pain scoring before and after analgesia with level of significance >0.01.

Result: Obstetric analgesia by giving tramadol infusion were significantly reduced pain score from mean score of 4.1 ± 0.59 to 1.96 ± 0.618 ($p < 0.001$). There was no significant differences in maternal vitals and fetal heart rate after using analgesia. The duration of 1st stage of labor were 6.8 ± 1.14 hours and 2nd stage of labor was 41.05 ± 10.75 minutes. Total 92% women delivered vaginally, 5 by outlet forceps and only 3 had cesarean section. Of these 100 deliveries ; 96% babies born with apgar score ≥ 7 at 1 min, and 99% had apgar score ≤ 7 at 5 min, only 2 babies developed respiratory depression. Most of women did not suffer from adverse effects except 2 women experienced nausea.

Conclusion: Tramadol infusion is a cost effective and safe alternative analgesia during labor in low socio-economic setting.

Keywords: Tramadol infusion, intravenous analgesia, labor pain

Introduction:

Birth process is painful procedure for most of women. Every women experience different intensity of pain but primi-gravidae is more likely to experience severe pain.¹ Labor can be both physically and psychologically stressful for women. The experience of labor pain is a highly individual reflection of variable stimuli that are interpreted by each individual woman. These stimuli are modified by emotional, motivational, cognitive social and cultural circumstances.²

And ideal analgesic during labor should be safe

and effective throughout the painful periods of labor without unpleasant maternal side effects as well as any depressant effect on baby. Thus making obstetrical analgesia as essential part of modern practices.³

Opioids are the most widely use systemic medications for labor analgesia, may be given intramuscularly or intravenously either intermittently bolus or by continuous intravenous infusion. The route and timing of administration influence maternal uptake and placental transfer. Intravenous continuous infusion has advantages

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Table 1: Demographic data

	Mean	S.D
Age(year)	26.47	4.676
Gestation (week)	38.37	1.079
Systolic B.P(mmHg)	115.400	8.923
Diastolic B.P(mmHg)	73.600	6.075
Pluse(beat/min)	81.460	4.028

Table 2: Wong Baker FACE pain rating before and after analgesia

Pain score	Score before analgesia N=100	Score after analgesia N=100	P-Value
0	-	-	0.0001
1	-	21	
2	-	62	
3	12	17	
4	64	-	
5	24	-	
Mean± S.D	4.1±0.590	1.96±0.618	

of less variability peak plasma concentration of drugs and faster onset of analgesia. Tramadol is a weak opioid analgesic and less sedative.^{4,6} It is recommended to use tramadol 100mg intramuscularly for labor analgesia,⁷ but there hasn't been sufficient research on continuous intravenous infusion of tramadol for labor analgesia. This study conducted to assess the efficacy and safety of tramadol infusion a method of labor analgesia.

Material & Methods:

This is a prospective, open, interventional study done on 100 primi-gravida attending Abbasi Shaheed Hospital, Gynae Unit I from 1st June 2018 to 30th December 2018. All low risk pregnant women with gestation of 34 to 40 weeks single tone pregnancy were included. Women had a minimum systolic and diastolic blood pressure of 90/60 mmHg and pulse of 60 beats/min at the time of inclusion. Women with history of respiratory, cardiac disease, hepatic disorder, renal insufficiency, neurological disorders, allergy to drug and any obstetrical contra-indication to vaginal birth were excluded from study. Informed consent in local language was obtained. 100mg of tramadol in 1000c.c of normal saline solution made and started during active phase of labor at a rate of 0.1 mg/min. The analgesics

were prescribed by the attending obstetrician, to the patients who fulfill the inclusion criteria. The women vitals were monitored to evaluate the changes in blood pressure and heart rate maternal hypotension was defined as systolic blood pressure below 90 mmHg. The intensity of pain was evaluated before and half hourly after starting analgesic till delivery. Wong Baker Faces pain



Instruction was given for using this scale with each performa to choose the face that best describes how woman is feeling. In this scale, '0' indicates no hurt while '5' represents the most intense pain.

Partogram was maintained to assess the progress of labor. Duration of labor, modes of delivery postpartum hemorrhage, apgar score at 1min and 5 min, neonatal respiratory depression and any maternal adverse events were recorded in predesigned performa.

Descriptive statistical analysis was used to analyze the demographic data and student t test used to compare pain score before and after analgesia with level of significance >0.01. Results are expressed in tables and figures.

Results:

The mean age of primigravida was 26.47± 4.67 years and the mean gestation was 38.37±1.079 weeks as shown in table1.

There were no significant differences found in blood pressure, pulse, respiratory rate and fetal heart rate after analgesia. At the beginning of active phase of labor, most of woman experience severe pain. Pain score of 4 in 64% woman and score '5' in 24% woman. After 30 min of analgesia showed good pain relief.

Wong Baker Faces pain rating scale showed sig-

Table 3: Duration of stages of labor

S.no	Stages	Means	±S.D
1	1st (hour)	6.8	1.144
2	2nd (minutes)	41.05	10.75
3	3rd (minutes)	11.10	2.312

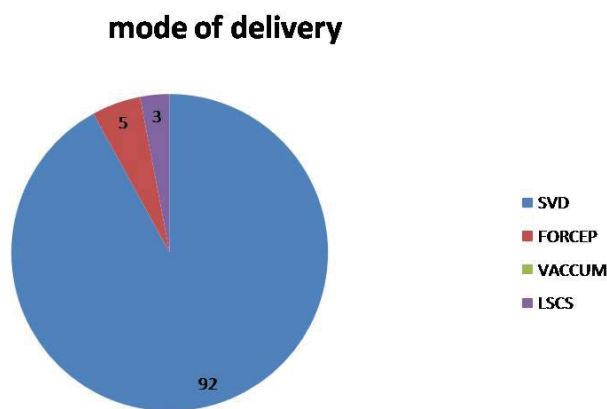


Figure 1: Mode of delivery

nificant decrease of pain from a mean score of 0.1 ± 0.59 to 1.96 ± 0.618 after analgesia ($p < 0.00$) as shown in table 2.

The duration of 1st stage of labor was 6.8 ± 1.14 hours, 2nd stage was 41.05 ± 10.75 min and 3rd stage 11.10 ± 2.31 min as shown in table 3.

Majority of women delivered vaginally 92%, 5 women delivered by outlet forceps and 3 needed cesarean section. 1 cesarean section due to non progress of labor and 2 were due to malposition, as shown in figure-1.

99% of babies delivered with good appgar score at 5 minutes only 2 neonates developed respiratory depression. In our study the maternal side effects were minimal only 2 women had nausea.

Discussion:

Opioids are the most widely used systemic analgesic for labour analgesia. Tramadol hydrochloride is a central analgesic with low affinity for opioid receptors, and it inhibits the re-uptake of nor adrenaline and serotonin these elevate the pain threshold there by producing spinal inhibition of pain. So tramadol is equally effective and

cheaper analgesic than others opioids.

Epidural analgesia provide an ideal pain relief in labor.⁸ But Use of systemic analgesic drugs remain as alternative of epidural anesthesia due to several reasons, including non-availability of epidural anesthesia, contra-indications like coagulopathy, hemorrhage and associated risk may result in refusal by some women.

When administered parenterally, tramadol has an onset of action in 10-20 min and duration of analgesic affects last for about 4-6hrs. Therapeutic doses of tramadol have no significant effect on respiratory rate, cardio vascular system. We did not observed any change in cardio-vascular and respiratory parameters in our study.

There are different techniques of pain scoring for assessment of the efficacy of the various form of analgesia. It is hard to compare the analgesic effects of the drugs since it depends on subjective evaluation of pain.

In our study, we used Wong Baker FACES scale for pain relief, since most of our patients were not literate; it was easier to relate pain relief by this scale. In the present study there was a significant improvement of pain observed after tramadol infusion use as mean pain score falls from 4.1-4.9. We cannot compare the result with others because no study found to observe intravenous infusion of tramadol so our study provides a good opportunity for future research.

Tramadol does not inhibit prostaglandin synthesis, so does not delay the onset of labor.⁷ In our study the mean duration of 1st stage of labor was 6.8 ± 1.14 hrs and 41.05 ± 10.75 min. These findings indicated that tramadol does not responsible for delay in the process of labor.

The side effects profile tramadol infusion is mild and acceptable; nausea, and dizziness have been reported frequently. The incidence of adverse effects of tramadol is related to the dosage and administration route.

In general, the clinically recommended dose does not produce marked respiratory depres-

sion.³ In the present study maternal side effects were minimal as compared to intramuscular regimen shown in other study. None of our patient developed respiratory depression.

Normal vaginal delivery, outlet forceps and cesarean sections were 92%, 5% and 3% in our study. These are similar mode of delivery to others receiving intra muscular tramadol analgesic.⁹

In this study most of babies born with good Apgar score and only 2-babies developed respiratory depression. But all babies discharged from hospital in healthy status. So tramadol I/V infusion provide good analgesia in labor with minimal maternal and neonatal adverse effects.

Conclusion:

Tramadol infusion showed good response in reducing pain with minimal side effects during labor. Tramadol infusion is a cost effective and safe alternative analgesia during labor in low socioeconomic setting.

Conflict of interest: none

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Role and contribution of authors:

Dr Shaista Rashid, conceived the idea, collected the data, references and wrote the initial write up.

Dr Ayesha Khatoon, went through the complete article and advised useful changes

Dr Shabnam Hasan, collected the references and helped in interpretation of the result.

Dr Zaira Batoool, collected the data, references

and helped in discussion writing.

Prof Dr Tazeen Fatima Munim, critically review the article and made the final changes.

Prof Aftab Imtaiaz, critically review the article and did the useful changes

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