

## Original Article

### Efficacy of an intravenous infusion of acetaminophen during the active phase of labour

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#### ABSTRACT:

**Background:** Child birth is allied with very severe pain for most women. Acetaminophen is also known as paracetamol, is commonly used for its analgesic and antipyretic effects. Hence; the present study was undertaken for assessing the efficacy of an intravenous infusion of acetaminophen during the active phase of labour. **Materials & methods:** A total of 100 pregnant females were enrolled. All the subjects were broadly divided into two study groups, with 50 patients in each group, as follows: Group A: Patients received IV Acetaminophen, and Group B: Patients receiving matched placebo. Secondary outcome measures included duration of labour, and VAS. All the results were recorded and analysed by SPSS software. **Results:** Mean duration of first stage labour among the subjects of the study group and the control group was 386.2 minutes and 663.6 minutes respectively. Significant results were obtained while comparing the mean duration of first stage of labour among study group and the control group of the subjects. Mean VAS after 30 minutes among subjects of study group and control group was 7.82 and 6.46 respectively. Significant results were obtained while comparing mean VAS after 30 minutes among subjects of the study group and the control group. **Conclusion:** Intravenous acetaminophen is an efficacious non-opioid drug for relieving labour pain and decreasing duration of labour without any significant adverse effects.

**Key words:** Acetaminophen, Labour

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#### INTRODUCTION

Child birth is allied with very severe pain for most women. Pain during labour is a complex, subjective and multi-faceted physiological phenomenon that varies in intensity among women and is subjected to many social and cultural modifiers. It encompasses both sensory component and the very vital emotional, motivational and cognitive facets. Thus, it becomes imperative on the part of the modern day obstetrician to provide adequate analgesia to women in labour.<sup>1-3</sup> An ideal labour analgesic should have potent analgesic efficacy with negligible side-effects to be used for pain relief. Systemic opioids have been widely used for relief of labour pain. Acetaminophen is also known as paracetamol, is commonly used for its analgesic and antipyretic effects. Acetaminophen is thought to exert its analgesic activity by inhibiting the synthesis of prostaglandins in the Central Nervous System (CNS) (central acting) and peripherally blocking pain impulse generation. Paracetamol has a

favourable safety profile without any risk of congenital anomalies.<sup>4-6</sup> Hence; the present study was undertaken for assessing the efficacy of an intravenous infusion of acetaminophen during the active phase of labour.

#### MATERIALS & METHODS

The present study was undertaken for assessing the efficacy of an intravenous infusion of acetaminophen during the active phase of labour. A total of 100 pregnant females were enrolled.

#### INCLUSION CRITERIA

- Age between 18-35 years.
- The Gestational age between 37-42 weeks.
- Patient seeking analgesia.
- Single viable fetus.
- 1st stage of Labour with cervical dilatation 3-4 cm (in active phase).

All the subjects were broadly divided into two study groups, with 50 patients in each group, as follows:

Group A: Patients received IV Acetaminophen,

Group B: Patients receiving matched placebo.

Secondary outcome measures included duration of labour, and VAS. All the results were recorded and analysed by SPSS software. Chi-square test, Mann Whitney U test and student t test were used for evaluation of level of significance. P- value of less than 0.05 was taken as significant.

## RESULTS

80 percent of the subjects (40 subjects) of the study group and 82 percent subjects (41 subjects) of the control group belonged to the age group of 21 to 30 years. No-significant results were obtained while comparing the age-wise distribution of subjects of both the study groups. 42 percent of the subjects (21

subjects) of the study group and 48 percent of the subjects (24 subjects) were of Primigravidae, while 52 percent of the subjects (26 subjects) and 52 percent of the subjects (26 subjects) were of Multigravidae respectively. Non-significant results were obtained while comparing the distribution of subjects of the study group and control group according to Gravida. Mean duration of first stage labour among the subjects of the study group and the control group was 386.2 minutes and 663.6 minutes respectively. Significant results were obtained while comparing the mean duration of first stage of labour among study group and the control group of the subjects. Mean VAS after 30 minutes among subjects of study group and control group was 7.82 and 6.46 respectively. Significant results were obtained while comparing mean VAS after 30 minutes among subjects of the study group and the control group.

**Table 1: Comparison of duration of first stage of labour among study group and the control group of the subjects**

Duration of first stage of labour (minutes)	Study	Control group	Mann Whitney U test	P- value
Mean	386.2	663.6	316.7	0.001 (Significant)
SD	171.1	204.4		

**Table 2: Comparison of VAS after 30 minutes among subjects of the study group and the control group**

Duration of first injection	Study	Control group	Mann Whitney U test	P- value
Mean	7.82	6.46	526.1	0.000 (Significant)
SD	0.95	0.47		

## DISCUSSION

Labour is the active process of delivering a foetus and is characterised by regular, painful uterine contractions which increase in frequency and intensity. The pain of labour has two components: visceral and somatic, and its anatomy is well documented. The cervix has a central role in both the first and second stage of labour. Paracetamol, the mode of analgesic action of which has still not been fully elucidated but probably is a centrally acting drug which inhibits prostaglandin synthesis, has recently been made available as intravenous preparation. Various studies have proved intravenous paracetamol as effective analgesic agent which is safe, effective, inexpensive, and requires no special monitoring. However, there are no significant trials regarding paracetamol analgesic effect on labor pain in women. If proved to be an effective analgesic agent in labor, paracetamol being inexpensive and simple to administer could be a boon agent of obstetric analgesia in developing countries.<sup>6-9</sup> Hence; the present study was undertaken for assessing the efficacy of an intravenous infusion of acetaminophen during the active phase of labour.

In the present study, 80 percent of the subjects (40 subjects) of the study group and 82 percent subjects (41 subjects) of the control group belonged to the age

group of 21 to 30 years. No-significant results were obtained while comparing the age-wise distribution of subjects of both the study groups. 42 percent of the subjects (21 subjects) of the study group and 48 percent of the subjects (24 subjects) were of Primigravidae, while 52 percent of the subjects (26 subjects) and 52 percent of the subjects (26 subjects) were of Multigravidae respectively. Non-significant results were obtained while comparing the distribution of subjects of the study group and control group according to Gravida. Das BP et al compared the efficacy of intravenous paracetamol and intramuscular tramadol injection as labour analgesic. This prospective-randomized study was conducted in 200 primigravidae at term pregnancy in active labour, distributed into two groups of 100 women each receiving single dose of intravenous 1000mg Paracetamol and other 100mg intramuscular tramadol. Pain intensity was recorded by Visual Analogue Scale before, one and three hours after drug administration. Labour events were recorded in partograph. Perinatal outcome and maternal complications were observed. VAS score was divided into four parts: no pain (VAS score 0cm), mild pain (VAS score 0.1-3.9cm), moderate pain (VAS score 4-6.9cm) and severe pain (VAS score 7-10cm). Difference in pain intensity was absent before drug administration. After 1 hour of

drug administration, in paracetamol group, severe pain 32.7%, moderate pain 57.1% and mild pain 10.2%. In tramadol group, severe pain 52%, moderate pain 44.9% and mild pain 3.1%. After 3 hours of drug administration, in paracetamol group, severe pain 37.8%, moderate pain 46.9% and mild pain 15.3%. In tramadol group, severe pain 58.2%, moderate pain 39.8% and mild pain 2.04%. Differences in the VAS score between the groups were statistically significant. Mean labour duration in paracetamol and tramadol group – 4hrs38min±51.25mins and 5hrs42mins±58.16mins respectively. Complications – in paracetamol group, 5% nausea, 2% vomiting and 5% PPH (mainly traumatic) while in Tramadol group, 9% nausea, 5% vomiting and 3% PPH and 1 NICU admission in tramadol group. Intravenous paracetamol is a more effective labour analgesic. It shortens labour with fewer maternal and foetal adverse effects as compared to intramuscular tramadol.<sup>10</sup>

In the present study, Mean duration of first stage labour among the subjects of the study group and the control group was 386.2 minutes and 663.6 minutes respectively. Significant results were obtained while comparing the mean duration of first stage of labour among study group and the control group of the subjects. Mean VAS after 30 minutes among subjects of study group and control group was 7.82 and 6.46 respectively. Significant results were obtained while comparing mean VAS after 30 minutes among subjects of the study group and the control group. Gupta K et al evaluated 80 parturients were randomly assigned to two groups of 40 each, to receive either 1000 mg (100 ml) i.v. paracetamol or 100 ml normal saline as placebo, 30 min before the procedure. The primary outcome was hourly mean consumption of levobupivacaine and fentanyl mixture (ml.h-1). Secondary outcomes included pain score, sensory and motor block, haemodynamic parameters of mother, duration of second stage of labour, mode of delivery, Apgar scores, foetal heart rate and adverse effects. Results: The hourly mean drug consumption in the Paracetamol group was significantly lower as compared with the Placebo group. The mean number of boluses taken was also significantly less in the paracetamol group. Pain scores decreased in both the groups without significant inter-group differences. From the results, the authors concluded that use of 1000 mg i.v. paracetamol decreases the mean hourly drug consumption through epidural route.<sup>11</sup>

## CONCLUSION

Intravenous acetaminophen is an efficacious non-opioid drug for relieving labour pain and decreasing duration of labour without any significant adverse effects.

## REFERENCES

1. Patil S, Somashekara SC, Goud GK, et al. Tramadol analgesia in labour. *Int J Pharm Biomed Res.* 2012;3(1):49–51.
2. Makkar JK, Jain K, Bhatia N, Jain V, Mithralwal SM. Comparison of analgesic efficacy of paracetamol and tramadol for pain relief in active labour. *Journal of Clinical Anesthesia.* 2015;27:159–63.
3. Abdollahi MH, Mojibian M, Pishgahi A, Mallah F, Dareshiri S, Mohammadi S, et al. Intravenous paracetamol versus intramuscular pethidine in relief of labour pain in primigravid women. *Niger Med J.* 2014;55:54–57.
4. Breivik H, Borchgrevink PC, Allen SM, Romundstad LA, Breivik E. K, Hals EK, et al. Assessment of pain. *Br J Anaesth.* 2008;101(1):17–24.
5. Thakur R, Patidar R. Comparative study of transcutaneous electrical nerve stimulation (TENS) and tramadol hydrochloride for pain relief in labor. *J Obstet Gynecol India.* 2004;54:346–50.
6. Long J, Yue Y. Patient controlled intravenous analgesia with tramadol for labor pain relief. *Chin Med J (Engl).* 2003;116: 1752–5.
7. Karim HI, Abd-El-Maeboud, Ahmed EH, Elbohoty WE, Mohammed HM, Elgamel, et al. Intravenous infusion of paracetamol for intrapartum analgesia. *Journal of Obstetrics and Gynecology Research.* 2014;40(11):2152–57.
8. Breivik EK, Björnsson GA, Skovlund E. A comparison of pain rating scales by sampling from clinical trial data. *Clin J Pain.* 2000;16:22–28.
9. Karim HI, Abd-El-Maeboud, Ahmed EH, Elbohoty WE, Mohammed HM, Elgamel, et al. Intravenous infusion of paracetamol for intrapartum analgesia. *Journal of Obstetrics and Gynecology Research.* 2014;40(11):2152–57.
10. Breivik EK, Björnsson GA, Skovlund E. A comparison of pain rating scales by sampling from clinical trial data. *Clin J Pain.* 2000;16:22–28.
11. Gupta K, Mitra S, Kazal S, Saroa R, Ahuja V, Goel P. I.V. paracetamol as an adjunct to patient-controlled epidural analgesia with levobupivacaine and fentanyl in labour: a randomized controlled study. *British Journal Of Anaesthesia.* 2016; 117 (5): 617–22.