European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 9, Issue 1, Winter 2022

ORIGINAL RESEARCH

ASSESSMENT OF EFFICACY OF PARACETAMOL IN CONTROLLING ANALGESIA DURING LABOUR: AN INSTITUTIONAL BASED STUDY

[1]Pooja Namdeo, [2]Sonil Srivastava

[1,2]Assistant Professor, Department of Obstetrics & Gynaecology, LN Medical College & Research Centre, Bhopal, Madhya Pradesh, India

Correspondence:
Dr. Sonil Srivastava
Assistant Professor, Department of Obstetrics & Gynaecology, LN Medical College & Research Centre, Bhopal, Madhya Pradesh, India
Email: drsonilsrivastava@gmail.com

ABSTRACT

Background: The present study was undertaken for assessing the efficacy of paracetamol in controlling analgesia during labour.

Materials &Methods: A total of 50 pregnant subjects were enrolled. All the subjects were broadly divided into two study groups, with 25 patients in each group, as follows: Group A: Patients received IV Paracetamol, and Group B: Patients received matched placebo. The course of events was studied and decrease in intensity of pain if any during labour was accessed by visual analog score and fetal outcome (i.e., notice Respiratory, APGAR score at 1 min to 5 min after birth). The VAS consists of a 10-cm horizontal line anchored at one end with the words "no pain" and at the other end with the words "worst pain imaginable." All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test and student t test was used for evaluation of level of significance.

Results: Mean VAS after 30 minutes among subjects of Group A and Group B was 6.25 and 7.13 respectively. Significant results were obtained while comparing mean VAS after 30 minutes among subjects of the study group and the control group. Mean VAS after 60 minutes among subjects of Group A and Group B was 6.12 and 7.96 respectively. Significant results were obtained while comparing mean VAS after 60 minutes among subjects of the study group and the control group.

Conclusion: Intravenous infusion of acetaminophen during labour assists in relieving labour pain without any maternal and fetal adverse effects.

Key words: Paracetamol, Pregnant, Analgesia.

INTRODUCTION

Normal Labour is defined as one in which fetus presents as vertex, starts simultaneously at term without undue prolongation and terminates naturally without clinical aids and without

complications.[1] 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. Visceral labour pain occurs during the early first stage and the second stage of childbirth. With each uterine contraction, pressure is transmitted to the cervix causing stretching and distension and activating excitatory nocioceptive afferents.[2- 4]

The aim of pain relief in labour is to render parturients relatively pain free whilst still able to participate in the birth experience. Ideally there should be no associated side effects or risks to both mother and baby. In reality, there are several methods of pain relief available, but none are ideal.[5]

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. Of these are pethidine (meperidine), fentanyl, tramadol, butorphanol, remifentanil and ketamine. However, systemic opioids are associated with maternal (dysphoria, sedation, respiratory depression, nausea and vomiting and delayed gastric emptying) and fetal adverse effects (fetal distress, early neonatal respiratory depression and behavioural and feeding problems) for up to six weeks post-delivery. These concerns have led to an exploration of an alternative non-opioid for maternal pain relief in labour.[6] Paracetamol (Acetaminophen) is an effective non-narcotic analgesic and antipyretic drug with tolerable side-effects.[6] Hence; the present study was undertaken for assessing the efficacy of paracetamol in controlling analgesia during labour.

MATERIALS & METHODS

The present study was undertaken for assessing the efficacy of paracetamol in controlling analgesia during labour in Department of Obstetrics & Gynaecology, LN Medical College & Research Centre, Bhopal, Madhya Pradesh, India. A total of 50 pregnant subjects were enrolled.

Inclusion criteria for present study included:

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

All the subjects were broadly divided into two study groups, with 25 patients in each group, as follows:

Group A: Patients received IV Paracetamol,

Group B: Patients reviving matched placebo.

The course of events was studied and decrease in intensity of pain if any during labour was accessed by visual analog score and fetal outcome (i.e., notice Respiratory, APGAR score at 1 min to 5 min after birth). The VAS consists of a 10-cm horizontal line anchored at one end with the words “no pain” and at the other end with the words “worst pain imaginable.” All

the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test and student t test was used for evaluation of level of significance.

RESULTS

Mean age of the subjects of Group A and group B was 25.6 years and 26.9 years respectively. No-significant results were obtained while comparing the age-wise distribution of subjects of both the study groups. Majority of the subjects of both the groups were primigravida. Mean gestational age among subjects of group A and group B was 38.6 weeks and 38.1 weeks respectively. Significant results were obtained while comparing the mean duration of first stage of labour and mean duration of first infusion among study group and the control group.Mean VAS after 30 minutes among subjects of study group and control group was 6.25 and 7.13 respectively. Significant results were obtained while comparing mean VAS after 30 minutes among subjects of the study group and the control group. Mean VAS after 60 minutes among subjects of Group A and Group B was 6.12 and 7.96 respectively. Significant results were obtained while comparing mean VAS after 60 minutes among subjects of the study group and the control group.

Table 1: Comparison of VAS after 30 minutes

Duration of first injection	Group A	Group B	P- value
Mean	6.25	7.13	0.002 (Significant)
±SD	0.71	0.75	

Table 2: Comparison of VAS after 60 minutes

Duration of first injection	Group A	Group B	P- value
Mean	6.12	7.96	0.000 (Significant)
±SD	0.68	0.62	

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. Visceral labour pain occurs during the early first stage and the second stage of childbirth. With each uterine contraction, pressure is transmitted to the cervix causing stretching and distension and activating excitatory nocioceptive afferents. These afferents innervate the endocervix and lower segment from T10 – L1. Acetaminophen (N-acetyl-p-aminophenol, paracetamol [APAP]) is the most widely used drug for the treatment of pain and fever experienced by children around the world. While APAP is generally considered to be safe and effective in doses recommended by the manufacturer, concerns have arisen over the past decade as APAP has been increasingly recognized as a major cause of acute liver failure in adults in the United States (US). While APAP is also an important cause of acute liver failure in children, it plays a relatively smaller role in the etiology of acute liver failure from a global standpoint. Recent reports have revealed that a significant number of adults develop elevations in hepatic transaminase levels while receiving recommended doses of APAP in a controlled research setting. Similar data

are not available in children.[6- 10] Hence; the present study was undertaken for assessing the efficacy of paracetamol in controlling analgesia during labour.

In the present study,Mean age of the subjects of Group A and group B was 25.6 years and 26.9 years respectively. No-significant results were obtained while comparing the age-wise distribution of subjects of both the study groups. Majority of the subjects of both the groups were primigravida. Mean gestational age among subjects of group A and group B was 38.6 weeks and 38.1 weeks respectively. Significant results were obtained while comparing the mean duration of first stage of labour and mean duration of first infusion among study group and the control group. Ramos-Rangel GE et al established the advantages and disadvantages of the various pharmacological options used to control pain following a C-section, improving safety and patient satisfaction. They concluded that multimodal analgesia has proven its effectiveness in postoperative pain control after caesarean delivery, significantly reducing the use of opioids and their associated adverse effects. Notwithstanding the adverse effects described in the literature, the cornerstone of analgesia therapy after caesarean section are opioids, both neuraxial or parenteral administration.[10] Altenau B et al determined whether the administration of intravenous acetaminophen following routine scheduled caesarean delivery would decrease the need for narcotic medications to control postoperative pain. There was no significant difference in narcotic side effects (nausea/emesis, respiratory depression, constipation). They concluded that Intravenous acetaminophen in the postoperative period following caesarean delivery resulted in a significant decrease in oral narcotic consumption for pain control.[11]

In the present study, Mean VAS after 30 minutes among subjects of study group and control group was 6.25 and 7.13 respectively. Significant results were obtained while comparing mean VAS after 30 minutes among subjects of the study group and the control group. Mean VAS after 60 minutes among subjects of Group A and Group B was 6.12 and 7.96 respectively. Significant results were obtained while comparing mean VAS after 60 minutes among subjects of the study group and the control group.Chou et al reviewed 10 randomised clinical trials comparing analgesic efficacy of single-dose paracetamol with placebo for perineal pain in early postpartum period. They concluded that more women experienced pain relief and fewer had additional pain relief with paracetamol compared with placebo, although potential adverse effects were not assessed and generally the quality of study was unclear. Another trial comparing effect of paracetamol with placebo on postoperative pain management in Caesarean operations showed that paracetamol is a safe and effective treatment option in post-Caesarean pain. Although there are numerous studies in favour of our findings which show efficacy of paracetamol for pain management in gynaecological operations, but trials examining normal vaginal delivery pain are not adequate.[12, 13]

CONCLUSION

Intravenous infusion of acetaminophen during labour assists in relieving labour pain without any maternal and fetal adverse effects. However, the effect of acetaminophen in reducing duration of labour is beguiling and necessitates future research.

REFERENCES

1. Graham GG, Scott KF. Mechanism of action of paracetamol. American journal of therapeutics 2005; 12(1): 46–55. doi:10.1097/00045391-200501000-00008. PMID 15662292.
2. Labor S, Maguire S. The Pain of Labour. Reviews in Pain. 2008;2(2):15-19.
3. Cheer JF, Cadogan AK, Marsden CA, Fone KC, Kendall DA. Modification of 5-HT2 receptor mediated behaviour in the rat by oleamide and the role of cannabinoid receptors. Neuropharmacology. 1999;38:533–541.
4. G. T. Tucker, A. Rostami-Hodjegan, and P. R. Jackson. Bioequivalence—a measure of therapeutic equivalence. In H. H. Blume and K. K. Midha (eds.) Bio-International 2—Bioavailability, Bioequivalence and Pharmacokinetics Studies, Medpharm, Stutgart, pp. 33-48.
5. Jahr, J. S., & Lee, V. K.Intravenous acetaminophen. Anesthesiology Clinics 2010; 28(4), 619–45.
6. Abood ME, Martin BR. Molecular neurobiology of the cannabinoid receptor. Int Rev Neurobiol. 1996;39:197–221.
7. Lieberman E, O′Donohue C. Unintended effects of epidural analgesia during labor: A systematic review. Am J ObstecGynecol 2002;186:S31-68.
8. Wallet F, Clement HJ, Bouret C, Lopez F, Broisin F, Pignal C, et al. Effects of a continuous low-dose clonidine epidural regimen on pain, satisfaction and adverse events during labour: a randomized, double-blind, placebo-controlled trial. Eur J Anaesthesiol2010;27:441-7
9. Malaise, O., Bruyere, O., &Reginster, J.-Y. Intravenous paracetamol: A review of efficacy and safety in therapeutic use. Future Neurology 2007; 2(6), 637- 88.
10. Ramos-Rangel GE, Ferrer-Zaccaro LE, Mojica-Manrique VL, La Rotta MGL. Management of post-cesarean delivery analgesia: Pharmacologic strategies. Colombian Journal of Anesthesiology. 2017; 45(4): 327-34.
11. Altenau B, Crisp CC, Devaiah CG, Lambers DS. Randomized controlled trial of intravenous acetaminophen for postcesarean delivery pain control. American journal of obstetric and gynaecology. 2017; 217(3): 362.e1–362.e6.
12. Kiliçaslan A, Tuncer S, Yüceaktaş A, Uyar M, Reisli R. The effects of intravenous paracetamol on postoperative analgesia and tramadol consumption in cesarean operations. Agri. 2010;22:7–12.
13. Chou D, Abalos E, Gyte GM, Gülmezoglu AM. Paracetamol/acetaminophen (single administration) for perineal pain in the early postpartum period. Cochrane Database Syst Rev. 2010:CD008407.