



THE UNIVERSITY
of EDINBURGH

Pain control in labour Intravenous paracetamol

Goals: the reduction in the severity of pain in women and adolescent girls undergoing labour in Liberia

Permissions

- Research into the use of IV paracetamol in pregnant patients during labour
- Presented to the Ministry of Pharmacy 2019
- MOH agreed to a trial in one hospital beginning January 2020
- MCAI purchased 100 vials at 2 USD each = 200 USD
- Information sheet read to mothers by obstetric clinicians and trainees at CB Dunbar Hospital and data collected on each mother approached for informed consent
- Effects of the treatment documented using a pain score and by taking the views of each mother after birth.

How bad is labour pain?

Women's experience of pain during childbirth

“Labor pain is one of the most severe pains which has ever been evaluated and its fear is one of the reasons women wouldn't go for natural delivery. Considering different factors which affect experiencing pain, this study aimed to explain women's experiences of pain during childbirth”.

[Nastaran Mohammad Ali Beigi](#), MSc,^{*} [Khadijeh Broumandfar](#), MSc,^{*} [Parvin Bahadoran](#), MSc,^{*} and [Heidar Ali Abedi](#), PhD Iranian Journal of Nursing and Midwifery Research 2010: 15: 77-82
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093177/#>

Research base

1. Intravenous infusion of paracetamol versus intravenous pethidine as an intrapartum analgesic in the first stage of labor

International Journal of Gynecology & Obstetrics / Volume 118, Issue 1 12
April 2012 <https://doi.org/10.1016/j.ijgo.2012.01.025>

Conclusion

The effectiveness of intravenous paracetamol was comparable to that of intravenous pethidine, but paracetamol had fewer maternal adverse effects.

Research base

2. Intravenous infusion of paracetamol for intrapartum analgesia

Journal of Obstetrics and Gynaecology Research / Volume 40, Issue 11, 11 August 2014 <https://doi.org/10.1111/jog.12465>

Results

Compared to controls, i.v. infusion of paracetamol was associated with significantly lower VAS score 15 and 30 min after the start of medication; also, there was a significantly lower incidence of need for rescue medication (8/57 [14%] vs 49/59 [83.1%], $P < 0.001$) at 60 min after the start of medication. There were no recorded maternal adverse effects in either group. There were no differences in occurrence of intrapartum fetal distress or neonatal Apgar scores between both groups.

Conclusion

Paracetamol appears to be a safe and effective medicine that can be used during the intrapartum period.

Research base

3. Intravenous paracetamol versus intramuscular pethidine in relief of labour pain in primigravid women

Niger Med J. 2014 Jan-Feb; 55(1): 54–57.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4071664/>

Conclusion:

It is concluded that intravenous paracetamol is more effective than intramuscular pethidine to relief labour pain in normal vaginal delivery.

Research base

4. Comparison of analgesic efficacy of paracetamol and tramadol for pain relief in active labor

Journal of Clinical Anesthesia (2015) 27, 159–163

Results: Both the groups showed comparable VAS scores at all times of observation. Lower mean VAS scores were reported in both the groups till 120 minutes only. The duration of first stage of labor was shorter in group P (248.00 ± 98.171 vs 340.63 ± 111.592 minutes; $P = .003$). The duration of second stage of labor was comparable between the 2 groups. Higher incidence of maternal side effects such as nausea/vomiting and sedation was associated with the use of tramadol. Neonatal outcome was comparable.

Conclusion: Intravenous paracetamol provides comparable analgesia as intramuscular tramadol during active labor.

Research base

5. Intravenous paracetamol infusion versus intramuscular tramadol as an intrapartum labor analgesic

Mohan H et al. Int J Reprod Contracept Obstet Gynecol. 2015 Dec;4(6):1726-1729

Conclusions:

Intravenous paracetamol is more effective labor analgesic with fewer maternal adverse effects and shortens labor as compared to intramuscular tramadol.

Research base

6. Efficacy of Intravenous Infusion of Acetaminophen for Intrapartum Analgesia

Journal of Clinical and Diagnostic Research. 2016 Aug, Vol-10(8): QC18-QC21

Conclusion: Intravenous acetaminophen is an efficacious non-opioid drug for relieving labour pain without any significant maternal and foetal adverse effects.

Research base

7. I.V. paracetamol as an adjunct to patient-controlled epidural analgesia with levobupivacaine and fentanyl in labour: a randomized controlled study.

BJA: British Journal of Anaesthesia, Volume 117, Issue 5, November 2016, Pages 617–622, <https://doi.org/10.1093/bja/aew311>

Conclusions:

Use of 1000 mg i.v. paracetamol decreases the mean hourly drug consumption through epidural route. Thus i.v. paracetamol is a safe and effective adjunct to PCEA in labour analgesia.

Research base

8. What is the evidence to support the use of IV paracetamol for the short term treatment of moderate to severe pain in adults?

Prepared by UK Medicines Information (UKMi) pharmacists for NHS healthcare professionals

<https://www.sps.nhs.uk/>

Conclusion:

There is a large volume of data to support the use of intravenous paracetamol for the short-term treatment of moderate to severe pain in adults. IV paracetamol has become widely used in clinical practice and incorporated into clinical guidelines including some NICE guidelines.

Research base

9. A Randomized controlled trial of intramuscular pentazocine compared to intravenous paracetamol for pain relief in labor at Aminu Kano Teaching Hospital, Kano
<https://www.ajol.info/index.php/tjog/article/view/162499> Trop J Obstet Gynaecol 2017;34:116-123

Conclusion:

The analgesic efficacy of IV paracetamol was similar to that of IM pentazocine in labor, with similar levels of maternal satisfaction with pain relief, but IV paracetamol was associated with significantly lower rates of adverse effects

Research base

10 Comparison of Analgesic Efficacy of Paracetamol and Tramadol for Pain Relief in Active Labor

Obstetrics & Gynecology: May 2017 - Volume 129 - Issue 5 May 8, 2017

Conclusion:

Due to difficulty in administering epidural analgesia to all parturients, administration of paracetamol and tramadol infusion for analgesia is simple and less invasive alternative. In the present study both paracetamol and tramadol were equally effective for labor analgesia but paracetamol has emerged as safe alternative as compared to tramadol due to low incidence of side effects.

Statement for patient

Controlling the pain of labour in mothers attending CB Dunbar Hospital.

STATEMENT TO BE READOUT AND DISCUSSED WITH MOTHERS DURING LABOUR

- Acting on feedback from women in labour who have told us that they are in pain and want us to do something to help them we are trying to reduce the severity of pain suffered by mothers during labour.
- However, providing pain control in labour is not straightforward. We must be sure that it does not harm either you or your unborn baby. One drug which may be helpful is called Paracetamol. This is widely used as an oral medicine both within and outside pregnancy to control common causes of pain such as headaches or muscular aches following minor injuries. Provided the dose taken does not exceed 4 grams per 24 hours in an adult there are no significant side effects.
- The pain resulting from the contractions that occur during labour can be extremely severe and most of the techniques and drugs used in well-resourced countries are not easy to control or even safe in situations where medical resources are limited, as in Liberia.
- In the last few years, a form of Paracetamol has been developed that can reduce severe pain. It has to be given into a vein and, if an intravenous cannula is not already in place, a cannula will need to be placed in one of your veins in order for it to be administered. Previous studies in other countries, during labour, have shown that this intravenous preparation of Paracetamol can reduce severe pain. With permission of the Ministry of Health and yourself we would like to offer you this form of treatment during your labour.
- Pain can be described in the following 5 ways

Level 1. Mild,

Level 2. Causing you significant discomfort,

Level 3. Causing you significant distress

Level 4. Is so severe that it can be described as horrible

Level 5. Is so very severe that it can be described as excruciating or the worst possible pain that you could imagine.

Intravenous paracetamol will only be offered if you describe your labour pain as causing major distress; that is level 4 or 5.

- In any 6-hour period, only one intravenous injection of Paracetamol can be given. It is likely, and we hope, that the severity of pain will be reduced within the first 10 to 15 minutes and the benefit last for at least 5 more hours.
- You will be asked for your views on the level of pain you are suffering every 1 hour following the injection and this will be recorded onto a chart.
- **If labour is continuing for more than 6 hours after the injection of paracetamol and is causing severe pain a second dose could be given at this time, provided that you consider it is helping you.** Again, measurements of labour pains every hour after this second injection will continue until your labour has ended or until another 6 hours have passed. If labour has not ended 12 hours after the first injection has been given and you remain in severe distress/pain an additional third dose could be given.
- Very many thanks for reading/listening to this explanation.

I CONFIRM THAT I HAVE READ TO THE MOTHER THE ABOVE STATEMENT ON THE USE OF INTRAVENOUS PARACETAMOL IN THE CONTROL OF SEVERE PAIN DURING LABOUR AND, WHEN APPROPRIATE, THE MOTHER HAS ALSO READ THIS DOCUMENT.

- NAME
- SIGNATURE.....Date.....

Description of pain experienced before IV paracetamol given

- Pain can be described in the following 5 ways
- Level 1. Mild,
- Level 2. Causing you significant discomfort,
- Level 3. Causing you significant distress
- Level 4. Is so severe that it can be described as horrible
- Level 5. Is so very severe that it can be described as excruciating or the worst possible pain that you could imagine.

Intravenous paracetamol will only be offered if you describe your labour pain as causing major distress; that is level 4 or 5.

Information recorded for each patient treated

• Woman's Name..... Body weight..... Kg
Date:

• Age of mother: Yrs. Gravida and Parity of mother.....

• PLEASE CONFIRM HERE THE FOLLOWING INFORMATION regarding the mother's health. If any answer is YES then the intravenous paracetamol cannot be given

1. The mother is taking any other drug at this time: YES/NO
2. The mother has taken any paracetamol by mouth in the last 6 hours YES/NO
3. The mother has taken any traditional medicines or herbs YES/NO
4. The mother has a history of liver or kidney disease YES/NO
5. The mother is suffering any medical complication of pregnancy such as pre-eclampsia YES/NO

• Type of birth: Normal vaginal / Caesarean / Vacuum

• If Caesarean or vacuum what was the reason?
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• **Maternal outcome:** list any complications of labour, delivery or after birth:

• **Baby outcome**

• Survival: Live birth / still birth Gender Male / Female Apgar score at 1-minute Apgar score at 5 minutes

• Was the baby resuscitated? Yes/No If yes, please give details Was baby admitted to neonatal ward? Yes/No If yes, what was the reason?

• PLEASE ASK THE MOTHER THE FOLLOWING QUESTIONS USING THESE EXACT WORDS:

• "HOW DID YOU FIND THE INTRAVENOUS DRUG GIVEN TO HELP CONTROL THE PAIN OF LABOUR ? DID IT HELP WITH YOUR LABOUR? IF SO, IN WHAT WAYS? DID IT CAUSE YOU ANY PROBLEMS? IF SO, IN WHAT WAYS?" PLEASE ALLOW THE MOTHER TO WRITE HER ANSWER BELOW OR WRITE DOWN HER ANSWER USING HER OWN WORDS.

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Details of the administration of the drug

- Each 6 hourly dose given based on body weight: Do not give more than 4 doses in a 24-hour period
- Mother's weight 50 Kg or more give 1-gram (1000mg) doses (100ml by slow IV infusion over 15 minutes)
- Mother's weight 44 to 49 Kg give 750 mg doses (75ml by slow IV infusion over 15 minutes)*
- Mother's weight 33 to 43Kg give 500 mg doses (50ml by slow IV infusion over 15 minutes)*
- *1. For the 500mg dose *'before starting the paracetamol infusion the midwife should withdraw and discard'*
50ml of the solution from the 100ml (1000mg) bottle of paracetamol'.
- *2. For the 750mg dose *'before starting the paracetamol infusion the midwife should withdraw and discard'*
25ml of the solution from the 100ml (1000mg) bottle of paracetamol'.
- 3. For the 1000 mg dose *'the midwife should infuse the whole bottle (100ml) of paracetamol'*

Total number of patients January 2020 to March 2021

CB Dunbar Hospital maternity unit

- No. approached for consent and agreed to take part = 90 (69 NVD, 2 vacuum, 19 CS)
- 13 twins 5 delivered by CS
- Only 7 needed second dose
- No. refusals = 0
- No. expressing experience of pain relief = 89 out of 90. One made no comment as went for CS.
- No. experiencing a problem = 0
- **No. patients with IUFD = 6 (1 aged 16 years)**
- No. patients under 18 years = 17

Cost of IV paracetamol

- 20 USD for 10 vials (2 USD each)
- Each 10 ml vial contains 1000mg (1 gram) of IV paracetamol
- Given over 15 minutes
- 100 vials cost 200 USD

Examples of maternal statements

- G1P0 aged 25
- Admitted in labour with IUFD
- *The medicine help to reduce my pain. The pain was heavy on me especially I knew that I was going through the pain for nothing because my baby was dead. But I thank God for my life.*

Examples of maternal statements

- G1P0 Age 20 years
 - Normal vaginal delivery
 - *I want to tell all the midwife and doctor thank you very much for giving me pain medicin to reduce my pain because the pain was too much.*
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- G1P0 Age 14 years
 - Normal vaginal delivery
 - *I want to say thank you very much. The pain was too much but the medicin help to cool it down small. It did not cause me any problem.*

Ways forward?

- Continue at CB Dunbar Hospital?
- Enroll at other hospitals where obstetric clinician trainees as well as qualified obstetric clinicians are based?
- Will need funding source although IV paracetamol is inexpensive