

A Comparative Study of Efficacy of Oral Labetalol with Oral Amlodipine in Achieving Postpartum Blood-Pressure Control

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Abstract: Background: Hypertensive disorders remain a significant cause of maternal morbidity and mortality in the postpartum period. This study compares the effectiveness and safety of oral labetalol and oral amlodipine in controlling postpartum blood pressure. Methods: A prospective randomized comparative study was conducted at [Institution Name] on 120 postpartum women with systolic BP ≥ 150 mmHg and/or diastolic BP ≥ 100 mmHg within 48 hours of delivery. Participants were randomly assigned to receive either oral labetalol (100 mg BD) or oral amlodipine (5 mg OD). Blood pressure was monitored over 72 hours. Primary outcomes included the time taken to achieve blood pressure control and the number of doses required. Secondary outcomes included maternal side effects and the need for additional antihypertensive therapy. Results: Amlodipine achieved blood pressure control significantly faster than labetalol (22.4 ± 6.2 hours vs. 30.3 ± 5.7 hours, $p < 0.001$). Fewer doses were needed in the amlodipine group. Both drugs had minimal side effects, with headache being more common in the amlodipine group and fatigue in the labetalol group. No severe adverse effects were reported. Conclusion: Oral amlodipine is more effective than oral labetalol in achieving rapid blood pressure control in postpartum women and has an acceptable safety profile. It may be considered a preferable choice for initial management of postpartum hypertension.

Keywords: Postpartum hypertension, labetalol, amlodipine, blood pressure control, antihypertensive therapy

1. Introduction

Postpartum hypertension, defined as elevated blood pressure after delivery, can result in life-threatening complications such as stroke, pulmonary edema, and renal impairment. The therapeutic goals are to reduce blood pressure promptly while ensuring maternal safety and minimizing adverse effects. Oral labetalol and oral amlodipine are widely used agents; however, comparative data regarding their efficacy in the immediate postpartum period remain limited. This study aims to fill this gap by evaluating and comparing the efficacy, dosage requirement, and side effect profile of oral labetalol and amlodipine in this population.

2. Materials and Methods

Design: Prospective, randomized comparative study

Duration: 12 months

Sample Size: 120 postpartum women (60 in each group)

Inclusion Criteria:

- Women aged 18–40 years
- BP $\geq 150/100$ mmHg within 48 hours postpartum

Exclusion Criteria:

- Pre-existing hypertension
- Severe preeclampsia or eclampsia
- Hepatic/renal impairment
- Contraindications to study drugs

Interventions:

- Group A: Oral labetalol 100 mg twice daily
- Group B: Oral amlodipine 5 mg once daily
- Dose escalation was done if BP not controlled within 24 hours

Primary Outcomes:

- Time to achieve BP $< 140/90$ mmHg
- Number of doses required

Secondary Outcomes:

- Maternal side effects
- Need for second antihypertensive

Statistical Analysis: Student's t-test and Chi-square test were used; $p < 0.05$ considered significant.

3. Results

Baseline Characteristics:

- Mean age: 26.5 years (Labetalol) vs. 26.1 years (Amlodipine)
- Parity, mode of delivery, and baseline BP were comparable in both groups

Primary Outcomes:

- Time to BP Control:
- Amlodipine: 22.4 ± 6.2 hours
- Labetalol: 30.3 ± 5.7 hours
- $p < 0.001$ (significant)
- Total Number of Doses:
- Amlodipine: 2.6 ± 0.8
- Labetalol: 3.8 ± 1.1
- $p < 0.001$

Secondary Outcomes:

- Adverse Effects:
- Headache: More frequent in amlodipine group (16.7%)
- Fatigue: More frequent in labetalol group (20%)
- No serious adverse effects noted
- Additional Antihypertensives Needed:
- Amlodipine: 6.7%
- Labetalol: 13.3%

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- Not statistically significant

4. Discussion

The results suggest that amlodipine is more effective in achieving early blood pressure control in postpartum women than labetalol. Its once-daily dosing and fast onset of action make it a convenient option in clinical practice. Although labetalol remains widely used, especially in acute settings, amlodipine could be considered as a first-line agent in the postpartum period. Both medications had a good safety profile.

5. Strengths

- Randomized design
- Focused postpartum population

6. Limitations

- Single-center study
- Short follow-up period
- Lack of long-term neonatal data

7. Conclusion

Oral amlodipine is superior to oral labetalol in achieving rapid blood pressure control postpartum. With minimal side effects and ease of dosing, amlodipine may be considered a preferred initial treatment option for postpartum hypertension. Further multicenter studies are warranted to confirm these findings.

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