2023

Furosemide for Postpartum Management of Hypertensive Disorders: A Randomized Controlled Study

Margaret J. Herr

Holly A. Maxwell

Zachary Candela

Sheela Barhan

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Margaret J. Herr, BS; Holly M. Johnson, BS; Rose A. Maxwell, PhD; Zachary Candela, DO; Sheela Barhan, MD

Background: Loop diuretics have been investigated for managing postpartum hypertensive disorders, but there is currently insufficient clinical evidence pointing to any single agent. This study aims to compare blood pressure (BP) outcomes for patients with gestational hypertensive disorders receiving labetalol alone versus labetalol + furosemide during postpartum hospital stay. The primary aim was to learn if loop diuretic incorporation in conjunction with labetalol could lower the need for additional anti-hypertensive agents.

Methods: Patients were randomized to receive labetalol alone (200mg) or labetalol + furosemide (200mg and 20mg) on Day 0 postpartum after establishment of baseline BP. Labetalol dosing was increased per standard practice as indicated to maintain BP control. BP values were monitored throughout postpartum hospital stay and at a postpartum visit 14 days after discharge. Statistical analysis evaluated the effect of furosemide on systolic BP, diastolic BP, mean arterial pressure (MAP), additional hypertensive agent (Labetalol dose increase or switch to Nifedipine), urine output, and length of hospital stay.

Results: Thirteen patients were enrolled; Seven received labetalol alone and six received labetalol + furosemide. Two patients were excluded due to missing BP data. The experimental group receiving furosemide did not differ from the labetalol-only group for average daily BP outcomes (systolic, diastolic, and MAP) on Day 0, Day 1, and Day 2. Three patients in the labetalol + furosemide required dose increases compared to zero patients in the labetalol alone group. Patients receiving labetalol + furosemide had higher 24-hour urine output (4670.0±1497.2) than patients receiving labetalol alone (2552.1±1779.6; p=.056).

Conclusion: Outcomes for patients receiving labetalol + furosemide did not differ from outcomes for patients receiving labetalol alone. Contrary to expectations, patients receiving labetalol + furosemide required labetalol dose increases while none of the patients receiving labetalol alone had dose increases. In this small sample, the addition of furosemide did not reduce labetalol dose escalation.

Table 1: Patient demographic and clinical characteristics			
	Labetalol only (n=7)	Labetalol + furosemide (n=6)	P value
Age (years) [mean±SD]	27.0 ± 5.4	28.0 ± 2.7	.69
BMI [mean±SD]	33.1 ± 5.7	29.0 ± 4.2	.17
Gestational age at delivery (wks) [mean±SD]	37.4 ± 3.0	37.7 ± 0.8	.81
Race [n(%)]			.99
African American	3 (42.9%)	3 (50.0%)	
Caucasian	4 (57.1%)	3 (50.0%)	
Magnesium Sulfate received [n(%)]	5 (71.4%)	2 (33.3%)	.29
Nulliparous [n(%)]	3 (42.9%)	1 (16.7%)	.56
Cesarean delivery [n(%)]	3 (42.9%)	2 (33.3%)	.99
Preterm delivery [n(%)]	2 (28.6%)	1 (16.7%)	.99

Table 2: Clinical outcomes			
	Labetalol (n=7)	Labetalol + furosemide (n=6)	P value
Average daily SBP			.70
Day 0	138.1 ± 9.4	138.4 ±11.2	
Day 1	138.2 ± 8.5	134.9 ± 5.4	
Day 2	136.7 ± 13.7	135.2 ± 8.8	
Average daily DBP			.54
Day 0	80.1 ± 10.4	84.1 ± 11.8	
Day 1	80.7 ± 8.4	81.8 ± 4.6	
Day 2	75.5 ± 7.1	78.8 ± 7.1	
Average daily MAP			.77
Day 0	100.0 ± 9.2	102.4 ± 10.7	
Day 1	100.1 ± 7.7	99.5 ± 4.7	
Day 2	95.6 ± 8.7	97.6 ± 6.9	
Total urine output			
Day 0	2552.1 ± 1779.6	4670.0 ±1497.2	.06
Day 1	2650.0 ±2529.8	4283.3 ± 1433.8	.34
Day 2	975.0 ±1090.5	2575.0 ± 1489.3	.16
Day 3	997.5 ± 208.6	1700.0 ± 919.2	.40
End of day dose of labetalol			
Day 1	200.0 ± 0.0	240.0 ± 89.4	.30
Day 2	200.0 ± 0.0	340.0 ± 167.3	.13
Day 3	200.0 ± 0.0	600.0 ± 282.8	.18
Length of stay (days)	4.3 ± 1.8	3.5 ± 1.3	.47
Readmission for hypertension [n(%)]	2 (28.6%)	1 (16.7%)	.99