Inpatient Peripartum Labetalol is Associated with an Increased Risk of Fetal Hypoglycemia 1-hour Post-Delivery and Uterine Atony

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Introduction

- Hypertension is common in pregnancy and carries significant associated morbidity
- Calcium channel blockers (CCI) and Beta-blockers (BB) are the most common medications used
- Chronic labetalol use is associated with adverse neonatal outcomes
- Difficult to separate effects of medication use versus underlying pathology
- Our Study:
  - Single Center, Retrospective trial
  - Peripartum administration of labetalol
  - Neonatal outcomes; primary (bradycardia, hypoglycemia, NICU admissions) and secondary (atony, PPH)

References

1. de Bruin R. Int J Environ Res Public Health. 2022. PMID: 35954977
2. Bateman BT. Pediatrics. 2016 . PMID: 27577580

	Overall N=24,944[1]	Unexposed N=24,335[1]	Exposed N=609[1]	P-value[2]
Age (Years)	33.1 (4.8)	33.1 (4.8)	34.1 (5.4)	<0.001
Age >35	8,633 (35%)	8,358 (34%)	275 (45%)	<0.001
BMI (kg/m²)	30.1 (7.6)	30.1 (7.6)	36.0 (8.2)	<0.001
BMI >35	4,775 (19%)	4,488 (18%)	287 (47%)	<0.001
Delivery weight (g)	3,290.6 (654.7)	3,310 (635.1)	2,512.3 (903.5)	<0.001
Cesarean Delivery	8,014 (32%)	7,686 (32%)	328 (54%)	<0.001
Nulliparity	12,548 (50%)	12,185 (50%)	363 (60%)	<0.001

[1] n/N (%), Mean (SD) [2]Wilcoxon rank test, Pearson's Chi-squared test

Figure 1: Demographic data in patients exposed or unexposed to labetalol during the peripartum

	aOR[1]	95% CI[2]	p-value
Hypoglycemia (1h)			
Univariate	2.75	1.41-5.39	0.002
Multivariate	**2.36**	**1.07-5.32**	**0.034**
Bradycardia (by APGAR)			
Univariate	3.73	2.78-4.99	<0.001
Multivariate	1.06	0.74-1.50	0.76

[1]aOR =adjusted Odds Ratio, [2]CI = Confidence Interval

Figure 2: Risk of neonatal hypoglycemia at 1h of life or bradycardia after peripartum labetalol administration

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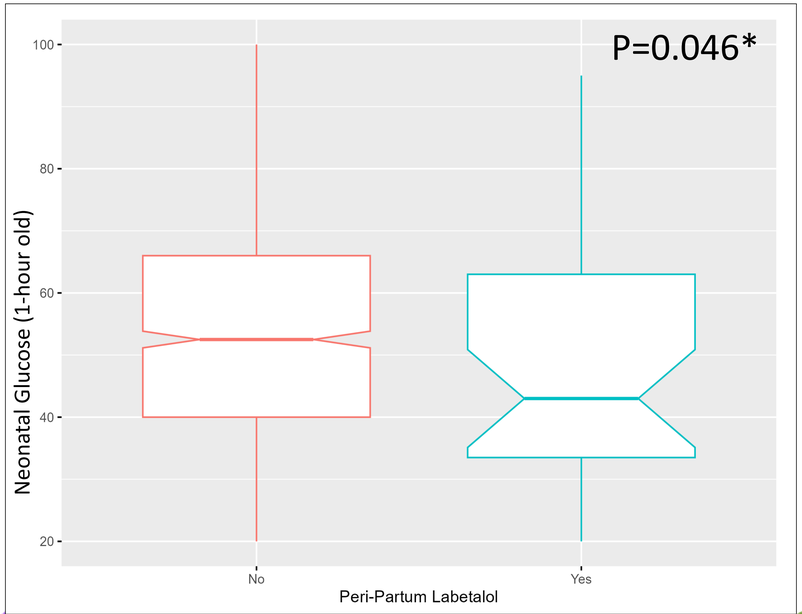

Figure 3: Serum glucose at one hour of life in unexposed (left) and exposed (right) groups. Boxplots depict median, 25th and 75th quartile ranges. **Wilcoxon rank test*

Results

- 26,058 total records; 24,944 records analyzed due to missing data
- 1-hour hypoglycemia associated with labetalol
  - (P=0.034, OR 2.36, 95%CI 1.07-5.32)
- No association with
  - 24-hour hypoglycemia (P=0.84)
  - Bradycardia (P=0.76), or
  - NICU admissions (P=0.93).
- Labetalol associated with uterine atony (P<0.001), change in Hct (P<0.001), adjusted for magnesium and GA.

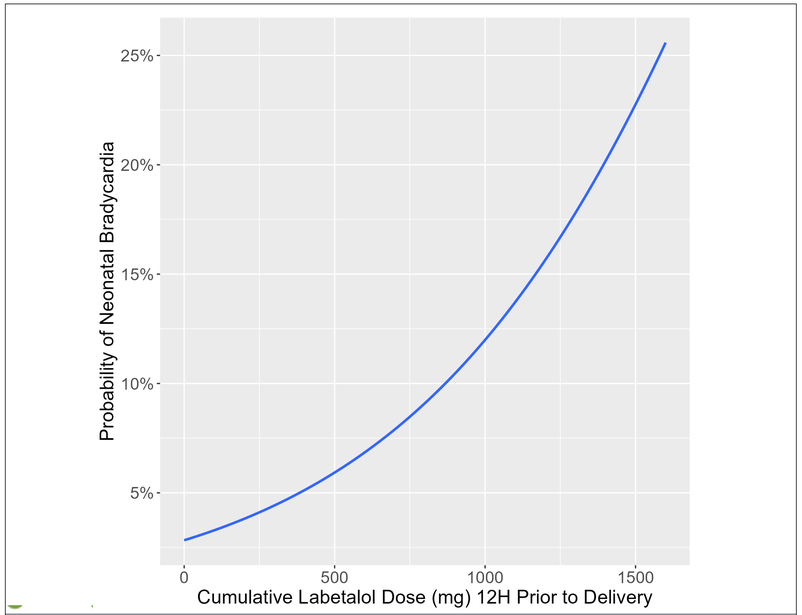

Figure 4: Logistic regression predicting neonatal bradycardia based on total dose of labetalol in the 12 hours preceding delivery.

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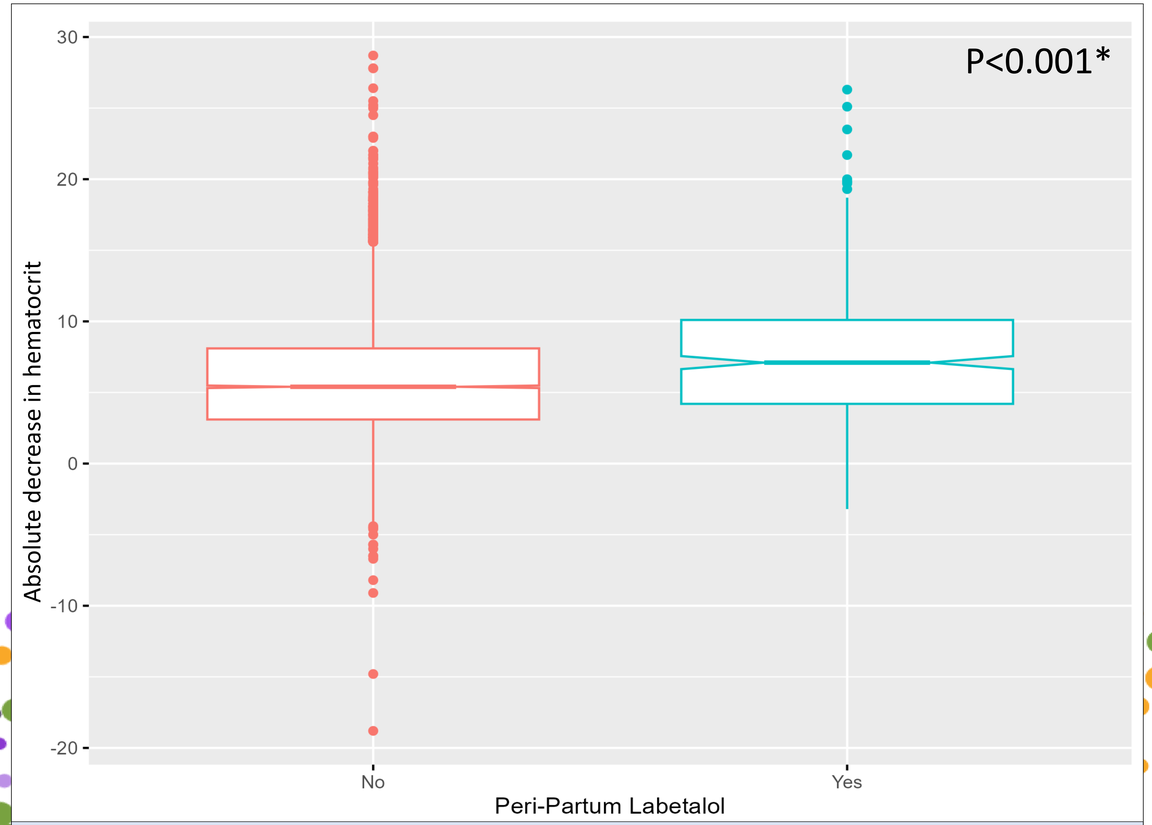

Figure 5: Change in hematocrit from pre- to post-delivery in unexposed (left) and exposed (right) groups. Boxplots depict median, 25th and 75th quartile ranges. Larger change means larger hematocrit drop. **Wilcoxon rank test*

Discussion

- We found:
  - Association between peripartum labetalol and neonatal hypoglycemia
  - No association with bradycardia or NICU admissions.
  - Link between peripartum labetalol and uterine atony.
- Difficult to identifying whether maternal and neonatal outcomes are driven by medication administration, either in the peripartum or throughout pregnancy, or by the underlying vascular pathology.
- We suggest nifedipine when the risk of neonatal hypoglycemia is already elevated.

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