

Racial differences in obstetric complications associated with peripartum cardiomyopathy and time to presentation

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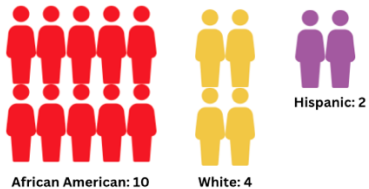
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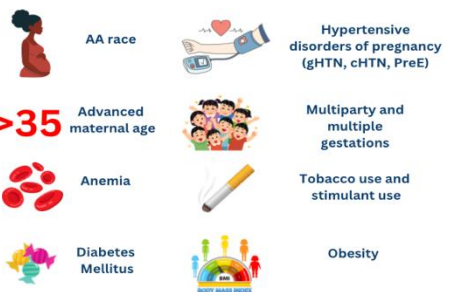
Background

- Peripartum cardiomyopathy (PPCM) presents with an LVEF < 45% within 1 month ante- or 5 months postpartum^{1,2}.
- PPCM occurs in ~1 in 2000 births and is most common in black women.¹
- Due to high rates of maternal morbidity and mortality, identifying risk factors can facilitate early diagnosis and intervention^{3,4}, as **early diagnosis and intervention has been associated with improved outcomes in PPCM patients**⁵.

Prevalence by race per 10,000 births



Known risk factors include African ancestry, hypertensive disorders of pregnancy, advanced maternal age, multiparity, multiple gestations, anemia, tobacco use, stimulant use, diabetes, and obesity³. Recently, our group found additional risk factors associated with PPCM include RBC transfusion, C-section and premature birth however **the association with race and time to presentation in respect to novel risk factors has yet to be explored.**



Methods

US hospital discharge data obtained from Arizona, Florida and Washington states (2003-2012)

Used ICD-9 CM codes to identify deliveries (V27.xx) and PPCM (674.50-54)

5,163,389 delivering mothers

2724 mothers presented with PPCM between 1 month before and 5 months after delivery

Multivariable analysis of obstetric characteristics using ICD-9 codes

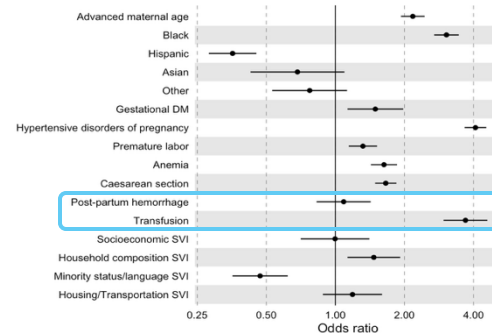
	PPCM (n=2724)	No PPCM (n=5163389)
Age, yrs***	29.7 ±6.5	27.4 ±6.2
Post-partum presentation	1569 (58)	
Race***		
White	539 (36)	2141116 (47.5)
Black	815 (55)	895897 (20)
Hispanic	84 (6)	1151702 (26)
Asian	18 (1)	116836 (3)
Native American	1 (0.1)	30840 (0.7)
Payer***		
Private	574 (36)	1534712 (46)
Medicare	43 (3)	15876 (0)
Medicaid	915 (57)	1595289 (47)
Other government	35 (2)	84123 (2)
Self-pay	24 (1)	116036 (3)
No Charge	10 (1)	19274 (1)
Hospital-home distance, miles	10.4±14.1	10.4±15.6
Baseline comorbidities		
Diabetes Mellitus***	57 (3.6)	46813 (1)
HTN ***	648 (41)	499921 (9.7)
Smoker***	190 (12)	254109 (5)
Asthma***	107 (7)	144338 (3)
Anemia***	396 (25)	504460 (10)
Pregnancy Risk Factors		
High risk pregnancy***	146 (9)	263077 (5)
Maternal Age > 35 years***	428 (27)	731277 (14)
Multiple gestation***	122 (8)	84114 (2)
Grand multiparity*	18 (1)	36741 (1)
Obstetric Complications		
Gestational DM**	57 (4)	45996 (1)
Hypertensive disorders***	645 (41)	499134 (10)
Gestational HTN**	138 (9)	188010 (4)
Preeclampsia/eclampsia**	333 (21)	188237 (4)
Premature labor***	259 (17)	384173 (7)
Caesarean section***	887 (57)	1797181 (35)
Stillborn***	70 (2.6)	35791 (0.7)
Postpartum hemorrhage***	171 (6)	120737 (2)
RBC transfusion***	278 (10)	37238 (0.7)
DVT/PE***	28 (1)	1111 (0.002)

Table 1: Characteristics of delivering mothers with vs. without PPCM. Previously identified risk factors for PPCM such as were significantly increased in our PPCM cohort (p < 0.001 for all). Rates of RBC transfusion, PPH, DVT, and still born rates were significantly increased in the PPCM cohort (p < 0.001 for all) (** p < 0.001, * p < 0.01, † p < 0.05).

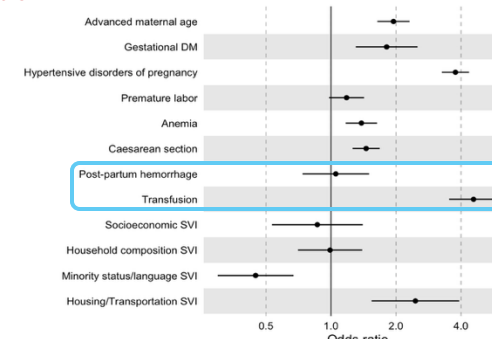
Results

Multivariable odds of postpartum cardiomyopathy by race

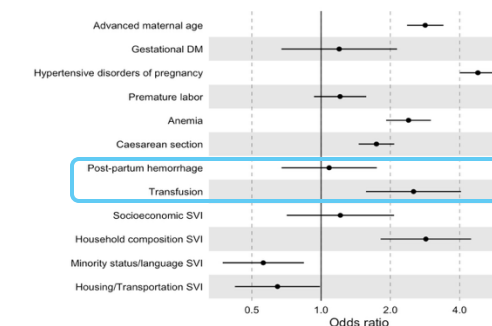
All Races



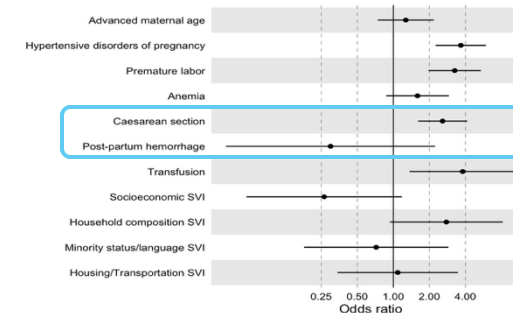
Black



White



Hispanic



Conclusions

- Known PPCM risk factors were again associated with PPCM in our cohort
- Postpartum hemorrhage was associated with PPCM in univariable but not multivariable analysis, regardless of race.
- RBC transfusion was associated with PPCM to a similar degree as established risk factors (black race, hypertensive disorders, advanced maternal age)**
- RBC transfusion was associated with an increased risk in postpartum presentation regardless of race.**

Future Directions

- Investigate the relationship between PPCM, blood disorders, and other acute inflammatory conditions (e.g. chorioamnionitis) with respect to race**
- Determine mechanism underlying relationship between novel risk factors and timing of PPCM presentation
- Enhance a PPCM risk stratification score to more accurately identify high risk individuals for increased monitoring.

Acknowledgments

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Sources

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