

Risk of Intracerebral Hemorrhage in Pregnancy and the Postpartum Period: A Population Based Analysis using a Cohort–Cross Over Design

Jennifer Meeks¹, Arvind Bambhroliya¹, Katie Alex², Sunil Sheth³, Farhaan Vahidy¹

¹University of Texas Health Science Center, ²University of Texas Health Science Center At Houston, ³University of Texas At Houston

Objective: To explore the risk of intracerebral hemorrhage (ICH) in pregnancy and postpartum period (PP) utilizing a cohort crossover design in which patients serve as their own control.

Background: While there is a documented increased risk of thrombotic events; little is known regarding the risk of ICH during PP.

Design/Methods: We utilized State Inpatient Databases for NY, FL (2005 – 2014) and CA (2005 – 2011), and identified patients with labor/delivery diagnoses using validated ICD-9 codes. The cohort crossover design included a 64wk case period (40wk pregnancy/labor/delivery, 24wk postpartum), followed by a 52wk interim period, and a 64wk crossover period. We excluded patients who were \leq 12yr, missing linkage information, admitted for false labor, or had prior ICH. We compared the rate of ICH during case and crossover periods and report absolute risk difference and rate ratio with 95% confidence interval (CI) estimated using conditional Poisson regression.

Results:

Over 3.3 million deliveries were identified, with 238 patients experiencing ICH during the case period. Those who died during the case / interim period or were in PP during the crossover period were removed from analyses. The overall rate of ICH during case vs. crossover was 8.1 vs 2.5 per 100,000 deliveries / patients, resulting in an absolute risk difference and rate ratio (CI) of 5.5 (4.3 – 6.8) and 3.2 (2.4 – 4.2) respectively. During the case period, the majority of ICH occurred during the 3rd trimester and first 12wks postpartum. Patients experiencing ICH during PP were more likely to be Black or Asian (compared to White), and had a history of hypertension, diabetes, coagulopathy, thrombocytopenia, substance abuse, or preeclampsia/eclampsia.

Conclusions: Pregnancy confers a significantly higher risk of ICH that peaks during the 3rd trimester and continues into early postpartum. Further investigation is warranted to characterize individuals at a greater risk of ICH during PP.