

共同研究支援報告書		
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職位	特任講師 (2024年9月まで)	
研究題目	Association between labour epidural anesthesia and the risk of autism spectrum disorders in offspring: Pooled analysis of Asian and Western birth cohorts	
短期支援(1年)		長期支援(3年) 年目
本年度の内容報告	<p>This study aimed to investigate the association between labor epidural anesthesia (LEA) and autism spectrum disorder (ASD) symptoms among offspring in both Asian and Western birth cohorts. As the first step of this project, we started with analyzing the data of the Hamamatsu Birth Cohort for Mothers and Children (HBC) Study in Japan. Additionally, we have obtained data from the Stress in Pregnancy (SIP) Cohort, a birth cohort based in New York, USA.</p> <p>The HBC Study included a total of 1,258 children and their mother. Children with missing data on exposure or outcome variables, as well as those born via cesarean delivery, were excluded from the analysis. The primary outcomes were ASD symptoms, assessed at ages 8 and 13 years using the Social Responsiveness Scale, Second Edition (SRS-2). We examined total T-scores along with two subdomain T-scores: Restricted and Repetitive Behavior (RRB), and Social Communication and Interaction (SCI). Higher T-scores indicate greater impairment and symptom severity. The exposure variable was the administration of labor epidural analgesia. We employed multivariate linear regression to estimate the β coefficient and 95% confidence intervals (CIs) for the associations between LEA exposure and continuous outcomes. Binary logistic regression analyses were employed to quantify the association between LEA exposure and binary outcomes. Both unadjusted and adjusted models were used, with adjustments made for child characteristics, paternal age, and maternal pre-pregnancy and pregnancy-related covariates. In the HBC study, 7.05% of children born through normal delivery were exposed to LEA. The final analytical sample consisted of 638 children assessed at 8 years old and 563 children assessed at 13 years old. Overall, the administration of LEA was not significantly associated with autism symptoms at 9 years ($\beta=0.90$, 95% CI: -2.73 to 4.54) and 13 years (0.29, -3.59 to 4.17). After adjusting for child characteristics, paternal age, maternal prepregnancy and pregnancy related covariates, the results remain materially unchanged. Our subgroup analysis by gender did not reveal any significant relationships. Among first-born children, LEA exposure was associated with increased total T-score at 8 years (2.41; -3.01 to 7.83) and 13 years (4.61; -2.26 to 11.6) although these associations were not statistically significant. We did not find any significant interaction of LEA and genetic risk on ASD symptoms. There was no significant association between LEA exposure and moderate to severe levels of autistic symptoms (binary outcomes) at 8 years (OR: 2.22; 0.88-5.59) and 13 years (OR: 1.22; 0.35-4.17). After adjusting for child and maternal characteristics, the results remain similar.</p> <p>In conclusion, our findings from the Japanese cohort do not support a significant association between labor epidural analgesia and ASD symptoms in children. Further analyses using data from the US and Dutch cohorts are underway to evaluate whether these findings hold across diverse populations.</p>	
成果(論文発表等)	The findings were presented at the Joint Congress of Global Health 2024, held in Okinawa (November 16–17, 2024), where the authors received the Best Poster Presentation Award.	
備考	The investigator received a KAKENHI Early-Career Scientist grant to continue this project in the coming years.	