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PURPOSE OF STUDY: To address the hypothesis that parents’ environmental and occupational exposures can influence the presence of a ventricular septal defect (VSD) in their offspring, we conducted a population-based case-control study of infants born in Washington State from 1987-2003. METHODS: We used birth certificate data linked with hospital discharge information to identify children diagnosed with VSD within the first two years of life (N=3,489) and controls (N=13,290). From the birth certificate data, we obtained information on parental occupation and county of maternal residence. The latter was categorized according to region (east-west), rural-urban classification, and proportion of farm land and crop land. RESULTS: Risk of VSD was greater for infants whose mothers residing Eastern Washington (odds ratio 1.30, 95% confidence interval: 1.03, 1.65). VSD in conjunction with other cardiac malformations (n=1,205) exhibited a stronger geographical association than isolated VSD (n=2,284). Analyses restricted to Eastern Washington did not reveal a clear relationship between risk of VSD and increasing proportion of agricultural land in the mother’s county of residence. Parental occupation in agriculture was not associated with the presence of VSD. CONCLUSIONS: While these findings suggest regional variation in Washington State in the occurrence of VSD, the basis for this variation remains to be determined.

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