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Poster abstracts

Non-chromosomal congenital anomalies and risk of childhood leukaemia: an Italian population-based case-control study

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Introduction

Several studies have evaluated the association between birth defects and childhood leukaemia (CL) (Carrozza *et al.*, 2012; Norwood *et al.*, 2017). Although the association between chromosomal conditions such as Down syndrome and increased CL risk is well established, associations between non-chromosomal birth defects and the disease are far less clear (Fischer *et al.*, 2012; Von Behren *et al.*, 2017). We conducted a population-based case-control study in two provinces of Northern Italy to evaluate CL risk in children born with non-chromosomal anomalies.

Methods

We identified all leukaemia cases diagnosed from 1998 to 2013 in children <15 years old in the Modena and Reggio-Emilia provinces (1,2 million inhabitants) through the Italian National Childhood Cancer Register. For each case, we randomly selected four population controls matched by age, sex, province of residence and calendar year. Through the Emilia-Romagna Region population-based Birth Defects Registry, linked to the European Surveillance of Congenital Anomalies network EUROCAT, we retrieved information about occurrence and type of congenital malformations for all study participants. We computed the odds ratio (OR) of leukaemia for children affected by non-chromosomal birth defects in a multivariable conditional logistic regression analysis. We adjusted the risk estimates for parental age, family income, residential exposure to benzene from vehicular traffic and electromagnetic field from high voltage power lines.

Results

We included in the study 132 cases and 528 controls, 5 of which (2 cases and 3 controls) were affected by a non-chromosomal congenital malformation. We found an increased risk of leukaemia in children born with non-chromosomal anomalies, with an OR of 2.7 (95% confidence interval 0.4–16.0) and 7.2 (95% confidence interval 0.4–143.6) in the crude and fully adjusted regression models, respectively.

Conclusions

Despite the limited stability of the risk estimates and the risk of unmeasured confounding, our study appears to suggest an association between non-chromosomal birth defects and risk of childhood leukaemia.

References

- Carrozza *et al.*, (2012) *Am J of Epidemiol* 175: 1217 – 24
- Fischer *et al.*, (2012) *J Pediatr* 160: 978 – 83
- Norwood *et al.*, (2017) *PLoS One* 12: e0179006
- Von Behren *et al.*, (2017) *J Pediatr* 185: 237 – 40