BACKGROUND & AIM

Over the past three decades, the prevalence of childhood asthma has increased substantially. It has been hypothesized that environmental risk factors, such as parental smoking, and air pollution are responsible for this increase. However, a consistent finding from twin studies is that the environment shared by family members does not contribute to the variation in susceptibility to asthma. The minor role of environmental factors seems remarkable and can probably explained by gene-environment interactions.

Aim of the study is to explore various environmental factors that may serve as potential environmental modifier of genetic and environmental influences on asthma.

METHODS

- The study included about 11,000 twin pairs from an ongoing longitudinal study of the Netherlands Twin Registry (NTR), who were born between 1986 and 2000.
- Information on possible environmental risk factors were obtained at ages 1, 2 and 5.
- At age 5, information on asthma was obtained by parental report. Parents were asked whether a physician had ever diagnosed asthma.
- To test the role of environmental factors as possible modifier of genetic and environmental influences on asthma we compared the ratio of MZ/DZ pairwise concordance across each level of the environmental factors.
- Pairwise concordance was calculated as C/(C+D), where C is the total number of concordant affected pairs and D is the total number of discordant pairs.

CONCLUSION

- Analyses revealed gestational age as possible environmental modifier of genetic and environmental influences on asthma. Shared environmental factors may play a role in the variability in susceptibility to asthma in children with a gestational age of less than 32 weeks and not in children with a longer gestational age.

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