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Prenatal animal contact and gene expression of innate immunity receptors at birth are associated with atopic dermatitis.

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Source

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Abstract

BACKGROUND:

Cross-sectional studies have suggested that prenatal farm exposures might protect against allergic disease and increase the expression of receptors of the innate immune system. However, epidemiologic evidence supporting the association with atopic dermatitis remains inconsistent.

OBJECTIVE:

To study the association between prenatal farm-related exposures and atopic dermatitis in a prospective study. We further analyzed the association between the expression of innate immune genes at birth and atopic dermatitis.

METHODS:

A total of 1063 children who participated in a birth cohort study, Protection against Allergy-Study in Rural Environments, were included in this study. Doctor diagnosis of atopic dermatitis was reported by the parents from 1 to 2 years of age by questionnaire. Gene expression of Toll-like receptors (TLRs) and CD14 was assessed in cord blood leukocytes by quantitative PCR.

RESULTS:

Maternal contact with farm animals and cats during pregnancy had a significantly protective effect on atopic dermatitis in the first 2 years of life. The risk of atopic dermatitis was reduced by more than half among children with mothers having contact with 3 or more farm animal species during pregnancy compared with children with mothers without contact (adjusted odds ratio, 0.43; 95% CI, 0.19-0.97). Elevated expression of TLR5 and TLR9 in cord blood was associated with decreased doctor diagnosis of atopic dermatitis. A significant interaction between polymorphism in TLR2 and prenatal cat exposure was observed in atopic dermatitis.

CONCLUSION:

Maternal contact with farm animals and cats during pregnancy has a protective effect on the development of atopic dermatitis in early life, which is associated with a lower expression of innate immune receptors at birth.

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