Worm infestation and the negative association with eczema (atopic/nonatopic) and allergic sensitization.

Abstract:
BACKGROUND: Worm infestations may play a role in preventing allergies. There is a lack of epidemiological information from Western countries on the association between worm infestation and eczema. OBJECTIVE: To investigate the association between worm infestation and eczema in a proper temporal sequence and under consideration of allergic sensitization. METHODS: Two surveys were performed in East German school children. Questionnaire data included the history of eczema and worm infestation and their time of onset. Specific IgE antibodies to five common aeroallergens were measured and used to define nonatopic and atopic eczema. Logistic regression analyses were performed to control for relevant confounders (age, sex, parental school education and history of allergies). In order to confirm the findings a corresponding conditional regression analysis was applied on cases and controls matched by age and sex. RESULTS: A total of 4169 children participated (response 75 and 76%) who were, on average, 9.2 years old (47% girls). Overall 17.0% reported a prior worm infestation (Ascaris 44%, Oxyuris 33%) and 18.1% had a history of eczema. Eczema occurred significantly less frequent in children who had a worm infestation (prior to the onset of eczema) compared with children without such a history (8.1% vs 16.5%, OR(adj): 0.45, 95%
CI: 0.33-0.60). The finding was confirmed by the corresponding matched case-control analysis (OR(adj): 0.57, 95% CI: 0.41-0.79). Atopic eczema was affected more by a prior worm infestation (OR(adj): 0.31, 95% CI: 0.18-0.56) than the nonatopic eczema (OR(adj): 0.58, 95% CI: 0.40-0.84). A total of 29.1% exhibited specific IgE antibodies to at least one aeroallergen. Sensitized children gave significantly less frequent a history of worm infestation (14.2% vs 18.3%, OR(adj): 0.74, 95% CI: 0.60-0.92). Stratified analysis revealed that this effect most pronounced for a sensitization to house dust mite. CONCLUSIONS: A worm infestation is associated with a reduced frequency of subsequent eczema, especially the atopic type. Furthermore allergic sensitization, especially to house dust mite, and worm infestation are negatively associated. The data support the concept that a lack of immune-stimulation by parasitic infections contributes to the development of allergies.