

Letter to the editor

Measles and atopy in Finland

The recent study by Paunio et al. (1) reported results based on a cross-sectional immunization study from Finland that included data on parentally recalled lifetime incidence of doctor-diagnosed measles and atopic diseases. The authors observed a positive association between measles and the risk of asthma, atopic eczema, and allergic rhinitis. Although they acknowledged that the results do not prove a causal relationship, they questioned the hypothesis that measles infection is protective against atopy (2). Furthermore, they questioned the validity of the “hygiene theory” behind the increase of asthma and atopy (3).

We propose that differential misclassification of exposure (4) may explain the positive association found in that study (1). There are two possible ways in which this may occur:

- 1) underdiagnosis of measles especially among healthy, nonatopic children
- 2) overdiagnosis of measles among children with asthma or atopy.

Paunio et al. (1) suggest that selection bias due to a higher measles mortality rate among atopic children may explain the inverse association between measles and atopy found in Africa (2). This argument is based on findings that atopic children may be more vulnerable to measles infection (5), perhaps due to lower production of interferon-gamma and decreased virus clearance. By the latter argument, atopic children have more serious illness due to measles infection, seeking medical care more often than their nonatopic counterparts. This would lead to diagnostic bias in favor of atopics. In other words, if nonatopics more often had mild or subclinical measles, the probability of the measles diagnostic label would be obviously lower, as the children may have been cared for at home and never taken to the physician. The work of Hayney et al. (5) suggests that this option is plausible and likely.

Option 2) given above requires that atopic children be more often in contact with a physician (with higher probability of being diagnosed with measles), but also that they have other clinical signs (such as skin reactions due to other viruses) that were mistakenly diagnosed as measles. This option requires rather large, differential overdiagnosis of measles among atopic children, an occurrence which we do not assume to be a feasible explanation.

In conclusion, we propose that differential misclassification of exposure, namely, the higher level of underdiagnosis of measles among nonatopic children, cannot be ruled out as a potential noncausal explanation for the results of Paunio et al.

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