Association between atopy and leprosy: Overestimated or real?

Dear Editor,

We read with interest the study by Tenório *et al*.,[1] which has found an association between atopic diseases with leprosy. We have some points to discuss that need clarification from the authors.

The authors have found atopy in half of their study participants. One possible explanation for this high prevalence could be the use of the International Study of Asthma and Allergies of Childhood (ISAAC) questionnaire for diagnosing atopy, which sometimes overestimates the condition.[2,3]

Kim *et al*. found that the ISAAC questionnaire overestimated the prevalence of allergic rhinitis (AR).[2] They found that the prevalence of AR based on the questionnaire, and both the questionnaire and skin prick test results, was 47.6% and 21%, respectively.

The symptoms considered by the authors for AR were runny nose or sneezing without a cold, which is also seen in vasomotor rhinitis. Another important point is that nasal symptoms such as nasal congestion, rhinorrhea, and epistaxis are seen in lepromatous leprosy. It is very difficult for a patient to differentiate between symptoms of AR and leprosy.

Lukrafka *et al*. in their study found that taking 'ever wheezing' as criteria for asthma diagnosis in the ISAAC questionnaire overestimates the prevalence of asthma.[3] The authors have mentioned that the diagnosis of asthma was considered if a study participant had a positive answer to this question. However, there are various causes of wheezing other than asthma. Marica *et al*. used the ISAAC questionnaire for adults to diagnose asthma.[4] They concluded that the sensitivity and specificity of the questionnaire increased by taking into account the totality of data (score ≥5) rather than response to individual questions.

Sánchez *et al*. provided a critical review of the ISAAC results in diagnosing allergic dermatitis (AD).[5] They mentioned that questions such as 'itchy rash' lack specificity to differentiate atopic dermatitis from other skin diseases. One question in the questionnaire for AD diagnosis is 'Have you ever had eczema'? However, eczema-like lesions have been reported in leprosy patients.[6] Eczematous lesion could be a reaction pattern to underlying leprosy infection, type 1 reaction, or asteatotic eczema.[6]

If we assume that the diagnosis of atopic diseases in this study is accurate, there are still some unanswered questions. Why do leprosy and atopic diseases have different epidemiological profiles? Leprosy is associated with low socio-economic status. In contrast, AD and other atopic diseases are associated with high socio-economic status.

The hypothesis of the association of atopic diseases with leprosy is based on T helper 2 (Th2) immune response present in atopic diseases. Th2 immune response is also seen in parasitic infections, and its association with leprosy is already known. It is important to know whether the authors had ruled out parasitic infections in study participants. If study participants were also suffering from parasitic infection, it would affect the study results.

In a similar study, Smith *et al*. studied 28 leprosy patients and 49 control subjects.[7] They assessed the atopic status through medical history, physical examination, serum *immunoglobulin E* (IgE), skin testing, and a radioallergosorbent test (RAST). However, they found no significant difference in the prevalence of atopic diseases between the two groups. Tenorio *et al.* suggested that this could be due to the inclusion of a few leprosy patients and a control group comprised of volunteers from the hospital rather than household contacts. However, it is worth noting that Tenório *et al.*[1] included smaller number of controls than patients.

In conclusion, to establish the real association between these two distinct conditions, atopic diseases diagnosis should be based on history, clinical examination, and supplementary diagnostic tools. It would be helpful if authors analyse the results by categorising participants into groups such as those with past atopy, current atopy, confirmed diagnosis, and, scoring, and then comparing the results between the groups.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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Neel Prabha, Meghana P S Reddy

Department of Dermatology, All India Institute of Medical Sciences, Raipur, Chhattisgarh, India.

Corresponding author:
Dr. Neel Prabha,
Department of Dermatology, All India Institute of Medical Sciences, Tatibandh, Raipur, Chhattisgarh, India.
ripuneel@gmail.com

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