

Short Communication

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Analysis of Epicutaneous Patch Test Results in Patients with Allergic Contact Dermatitis in a Rural Environment

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ABSTRACT

Recent literature explores epidemiological patterns of ACD and observes differences in rural and urban populations prevalence of ACD as well as causative allergens. This retrospective review aims to characterize the landscape of allergic contact dermatitis in the rural U.S.

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Allergic Contact Dermatitis (ACD) is a common skin condition caused by external allergens, affecting up to 20% of the population and significantly impacting quality of life. Diagnosis typically involves patch testing, which is becoming more common as ACD prevalence rises. Common allergens tested include metals, cosmetics, medications, and preservatives, with the FDA approving patch testing for children aged six and older. ACD develops when exposure to an antigen triggers a delayed hypersensitivity reaction, usually after repeated contact. Genetic predispositions and environmental factors influence the development of ACD, but no single cause fully explains its occurrence [1].

Environmental exposures are significant in determining ACD risk, particularly across urban and rural settings. For instance, rural populations in South Africa show lower rates of allergies, suggesting that local environments play a role. Similar findings are observed in studies comparing ACD prevalence in India, where urban populations were more affected, and in Ethiopia, where nickel was the main allergen in both urban and rural communities [2,3]. However, there is limited data comparing rural and urban U.S. Populations. One study in Iowa found decreased odds ratio of overall and skin self-reported allergies amongst woman living in rural compared to urban (>10,000 people) [4]. More characterization of allergies amongst specific geographic regions will help investigate these differences.

A study conducted at a rural dermatology clinic analyzed patch test results using the Smart Practice Allergen Bank that tested over 80 potential allergens from a total of 52 patients, most of whom had not responded to traditional treatments. Patients had a mean age of 42 years (range 12-74). The cohort was predominantly White (84.7%), with 29 females (55.8%) and 23 male (44.2%) patients with a slight female predominance. The most common allergens were gold (28.2%) and nickel (13%), followed by other allergens like oleamidopropyl and thimerosal. 72% of patients fully avoided allergens after testing, and over half (56.5%) reported significant improvements in symptoms [5].

Patch testing is a useful diagnostic tool, although its high sensitivity may lead to false positives, making it crucial to correlate clinical symptoms with test results. Nickel and gold are common metal allergies, with

nickel often causing dermatitis around jewellery, while gold allergies are more frequent in women and may take weeks to manifest after testing. Propolis, a substance found in many personal care products, is another prevalent allergen, especially in Europe, where up to 6.6% of the population is affected [6].

This study suggests that environmental factors may not play as significant a role in rural populations as previously thought, as allergens in this rural cohort aligned with those found in urban settings. However, limitations such as a small sample size and varied patient histories should be considered. Future research could further explore environmental influences on ACD in diverse populations.

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