

Patch test results obtained with the European baseline series at a diagnostics centre in Abuja, Nigeria

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Contact dermatitis accounts for 4.26% of all skin diseases in Nigeria.¹ The aim of this pilot study was to determine the sensitization pattern of patients with suspected allergic contact dermatitis to the European baseline series (EBS) contact allergens.

PATIENTS AND METHODS

From 2014 to 2018, 81 patients with eczematous lesions who presented at a diagnostic centre in Abuja, Nigeria were patch tested with 28 allergens of the EBS from AllergEAZE/SmartPractice (Calgary, Canada), according to ICDRG guidelines. The allergens were placed on Finn Chambers applied to the upper back with Scanpor tape obtained from AllergEAZE/SmartPractice and removed after 2 days. Reading was performed on day (D) 2 and D4. There were 50 females and 31 males; their mean age was 26.5 ± 16.3 years, and their age range was 2 to 55 years. Twenty-six patients were aged <15 years (32.1%).

RESULTS

Positive patch test reactions were observed in 68 patients (84%). Of these, 16 (19.8%) were sensitized to one allergen, and 52 (64.2%) were sensitized to two or more allergens. The 10 most common allergens, which gave positive reactions in >2% of the patients, are shown in Table 1. Other, less common allergens included *p*-phenylenediamine, *Myroxylon pereirae*, tixocortol pivalate, methylchloroisothiazolinone (MCI)/methylisothiazolinone (MI) (Kathon CG), paraben mix, lanolin

alcohol, thiuram mix, benzocaine, colophonium, clioquinol, quaternium-15, sesquiterpene lactone mix, primin, and *N*-isopropyl-*N*-phenyl-*p*-phenylenediamine, and MI, in descending frequency. No reactions to budesonide, mercaptobenzothiazole, epoxy resin and mercapto mix were observed. Patients aged <15 years showed more sensitization than adults to tixocortol pivalate (4:1), MCI/MI (4:1), paraben mix (3:1), and quaternium-15 (3:1). Atopic dermatitis (according to modified Hanifin and Rajka criteria) was observed in more children than adults (42.3% vs 9.1%).

DISCUSSION

Contact sensitization to EBS allergens was seen in 84% of tested patients, and this rate is higher than in other Nigerian studies.^{2,3} The higher number of females in this study, nickel being the commonest allergen, and contact sensitization being more common in females are in agreement with what has been found in other studies.²⁻⁴ The second and third commonest allergens, methylidibromo glutaronitrile (MDBGN) and formaldehyde, probably reflect a large number of patients with cosmetic and self-hygiene product allergies in our study. The fourth-ranking allergen, chromate, as in other studies, more frequently caused allergy in males, especially those with foot dermatitis (most people wear leather shoes).

In children, neomycin was the most common allergen, followed by MDBGN, formaldehyde, hydroxyisohexyl 3-cyclohexene carboxaldehyde (HICC), fragrance mix II, tixocortol pivalate, and MCI/MI. This is slightly

TABLE 1 The top 10 allergens (all tested in pet., except where indicated otherwise)

Allergen	Adult females (n = 33)	Adult males (n = 22)	Children aged < 15 y (n = 26)	Total (n = 81)
Nickel sulfate (5%)	10	9	3	22
Methylidibromo glutaronitrile (0.5%)	11	3	6	20
Formaldehyde (2% aq.)	11	1	6	18
Potassium dichromate (0.5%)	6	8	3	17
Neomycin (20%)	5	1	7	13
Fragrance mix I (8%)	6	4	3	13
Cobalt chloride (1%)	5	4	3	12
Hydroxyisohexyl 3-cyclohexene carboxaldehyde (5%)	7	1	4	12
Fragrance mix II (14%)	4	1	4	9
<i>p</i> -tert-Butylphenol-formaldehyde resin (1%)	3	3	1	8

different from what has been found in most studies,⁵ in which nickel was the most common allergen. Notably, the high frequency of atopic dermatitis (42.3%) in the children suggests atopy as a predisposing factor for contact hypersensitivity.⁵ More patch test studies in children from our area are needed. The frequencies of allergy to fragrance mixes, cobalt and *p*-tert-butylphenol-formaldehyde resin were similar to those in previous studies.⁴ There was one case of contact allergy to fragrance mix I, fragrance mix II, HICC and *M. pereirae* presenting as recurrent pruritic nodules.

The observed lack of sensitization to rubber chemicals could be attributable to the absence of patients with this occupational contact dermatitis in this study. In Nigeria, these will include vulcanizers and rubber plantation workers. Vulcanizers are low-income workers who cannot afford the cost of the patch test, and there are no rubber plantations in Abuja. The absence of budesonide allergy may be attributable to the lack of late readings (D6 or D7) in this study.⁶ The clinical sample size in this study is quite small; this is because of the low level of awareness at the beginning, combined with the cost of patch testing. The majority of the patients did not have health insurance coverage.

The sensitization rate and the pattern of allergens in our study are similar to those seen in other countries (with a few exceptions). This shows that the EBS is suitable for use in patch testing of Nigerian patients with allergic contact dermatitis. We support the changes made in the series for 2019,⁷ and hope the newly added allergen will be relevant to our environment.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

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