

RESULTS OF PATCH TESTING WITH A STANDARD SERIES OF ALLERGENS AT MANIPAL

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The study was designed to determine the common sensitizers in allergic contact dermatitis, to evolve a standard patch test tray for screening patients at our centre and to suggest allergens for a multicentric trial in India. 212 patients (65 women, 147 men) were patch tested with a standard series of allergens (23 allergens of European standard series extended with lanolin, cresol and gentamycin). The frequent sensitizers observed were gentamycin (14.2%), potassium dichromate (11.3%), nickel sulphate (10.8%), quinoline mix (9.0%), neomycin (8.5%) cobalt (7.1%), colophony (6.6%) and fragrance mix (6.1%). No positive reactions were observed for lanolin, quaternium - 15 and mercaptomix. Our standard tray will thus consist of all the allergens of European standard series except primin along with lanolin, cresol and gentamycin. Lanolin is included despite negativity as it was found to be the commonest sensitizer among topical medications in our previous study.

Key Words : Standard series, Patch test allergens

Introduction

Patch testing has become a standard method of investigating patients with suspected allergic contact dermatitis (ACD).¹ Testing with a standard series is useful when the offending agent cannot be detected inspite of a careful history and clinical examination. The American Academy Patch Test Kit and European Standard Series have been established. However no standard set has been put forth in India. The purpose of this study is to report the frequent sensitizers in ACD, to evolve a standard patch test tray for screening patients at our centre and to suggest allergens for a multicentric trial in India.

Materials and Methods

Patch testing in 212 patients (65 women, 147 men), aged between 12 and 72 years with suspected ACD examined between January 1992 and June 1993, was done with

European standard series of 23 allergens extended with lanolin, cresol and gentamycin. All allergens were obtained from Chemotechnique Diagnostics, AB Sweden except lanolin and gentamycin which were prepared at our laboratory. The standard patch testing technique with van der Bend chambers was used. Reactions were scored as recommended by International Contact Dermatitis Research Group (ICDRG).

Results

Details of the 26 allergens and the number of patients with positive reactions is shown in Table I. The most frequent sensitizers observed included gentamycin (14.2%), potassium dichromate (11.3%), nickel sulphate (10.8%), quinoline mix (9.0%), neomycin (8.5%), cobalt (7.1%), colophony (6.6%) and fragrance mix (6.1%). No positive reactions were seen for mercaptomix, lanolin and quaternium - 15.

Comments

In our study gentamycin showed the highest frequency of positive reactions. This may be due to the indiscriminate use of topical

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Table I. Details of 26 allergens and the number of patients with positive allergic reactions

Allergens	No. of patients with positive reactions
1. 0.5% potassium dichromate	24 (11.3%)
2. 1% 4-phenylene diamine base	2 (0.9%)
3. 0.25% x 4 thiuram mix	5 (2.4%)
4. 20% neomycin sulphate	18 (8.5%)
5. 1% cobalt chloride	15 (7.1%)
6. 5% benzocaine	3 (1.4%)
7. 5% nickel sulphate	23 (10.8%)
8. 3.0% x 2 quinoline mix	19 (9.0%)
9. 20% colophony	14 (6.6%)
10. 3% x 5 parabens	5 (2.4%)
11. 0.6% black rubber mix	1 (0.5%)
12. 30% wool alcohols	2 (0.9%)
13. 2.0% mercaptomix	0
14. 1% epoxy resin	4 (1.9%)
15. 25% balsam peru	7 (3.3%)
16. 1% 4-tert-butyl phenol formaldehyde resin	2 (0.9%)
17. 2% mercaptobenzothiazole	2 (0.9%)
18. 1% formaldehyde	8 (3.8%)
19. 1% x 8 fragrance mix	13 (6.1%)
20. 1% ethylene diamine hydrochloride	2 (0.9%)
21. 1% quaternium - 15	0
22. 0.01% primin	3 (1.4%)
23. 0.67% isothiazolinone (Kathon CG)	3 (1.4%)
24. lanolin	0
25. cresol 1%	4 (1.9%)
26. gentamycin	30 (14.2%)

medications, especially corticosteroid-gentamycin preparations which are ever increasing in the market. In neomycin sensitive patients positive reactions to gentamycin can also occur despite lack of exposure to it.² Potassium dichromate and nickel were the next frequent allergens encountered. Chromate is distributed widely and more abundantly than all other metals. The general population is exposed to chromates in leather (particularly shoes), matches, gloves, paints, detergents, bleaching agents, shaving creams, lotions, cement and chromic catgut. Nickel is ubiquitous. As one leading nickel manufacturer

claims: 'Nickel is with you and does things to you from the time you get up in the morning until you go to sleep in the night.'³

Sensitivity to quinoline mix was 9.0%. Quinoline mix is a combination of clioquinol (chloroform) and chlorquinaldol. These are fungistatic and antibacterial agents commonly incorporated in steroid creams. 8.5% of patients had positive patch test reaction to neomycin which is a common sensitizer particularly in eczematous and stasis dermatitis.

Allergy to cobalt was also frequent (7.1%). Sensitivity to cobalt may relate to jewellery or metal in clothing, dental plates, prostheses, plastics, vitamin B₁₂, pigments, printing inks, polystyrenes, lubricating oils, cement and detergents. Contact allergy to colophony was present in 6.6% of cases. Colophony (rosin) is present in adhesive tapes, gloss paper, transparent soap, polish, paints, blues, cosmetics and chewing gum. In 6.1% of patients sensitivity to fragrance mix (perfume) was seen. Fragrance mix is a mixture of cinnamic alcohol, cinnamic aldehyde, eugenol, isoeugenol etc. and is present in cosmetics, soaps and domestic cleaners. Sensitivity to the remaining allergens was seen in less than 4% of the patients. Chloroisothiazolinone (Kathon C G) sensitivity rates vary from country to country.⁴ We found a sensitivity rate of 1.4%. Kathon C G is used as a preservative in cosmetics ('wash off' toiletries such as shampoos and hair conditioners, and 'leave on' products).

Allergy to primin was seen in 1.4% of patients. Primin is present in primula obconica (primrose) and is the principal cause of plant dermatitis in Europe³ but not in India.

None of the patients showed positive reactions to mercaptomix, quaternium-15 and lanolin. Sensitivity to mercaptobenzothiazole

(MBT) was seen in 0.9% of cases. Mercapto mix may miss MBT sensitivity as the concentration of MBT in the mix is very low.³ Positive reaction to wool alcohol (lanolin sterols) was demonstrable in 0.9% of the cases though sensitivity to lanolin was absent. As wool alcohol is not the only sensitizing substance in lanolin, patch testing with lanolin from various sources should be done.

A standard series for our centre would consist of all the allergens of European standard series except primin along with gentamycin, lanolin, and cresol. Primin has been deleted as it is not a common cause of plant dermatitis in India. Though there was no positive reaction to lanolin, we wish to include it as it was found to be the commonest cause of ACD following topical medications in our earlier study.⁵

Nitrofurazone has not been added despite reports^{6,7} of it being the commonest sensitizer due to its low incidence⁵ in this part of the country. However it can be one of the allergens for a multicentric trial in India. Mercaptomix and quaternium-15 should also be included in the standard series as the former detects rubber sensitivity and the later is a preservative used in creams. The standard series cannot be rigidly defined. Additional allergens should be incorporated when

needed. e.g. cases of air borne contact dermatitis should be tested with parthenium as it is one of the commonest causes of plant dermatitis in India. A Standard series should be under constant review, the infrequent allergens being discarded and others being added to assess their significance.⁸

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