

PARABEN CONTACT HYPERSENSITIVITY

A K Bajaj and A K Chatterjee

One hundred patients suspected to be having contact hypersensitivity to topical medicaments were patch tested with methyl and propyl parabens along with commercially available topical medicaments. Six patients showed positive reactions to parabens. Two patients each were positive to methyl paraben and propyl paraben and two showed positive reactions to both of these. Three patients each showed positive reactions to soframycin, econazole and nitrofurazone also.

Key words : Methyl paraben, Propyl paraben, Contact hypersensitivity.

Parabens are alkyl esters of p-hydroxybenzoic acid. Derivatives of the maximum value are methyl, ethyl, propyl, butyl and benzyl esters. These are fairly soluble in fats, but only slightly soluble in water. Parabens are effective preservatives and are used in topical medicaments, skin creams, hair lotions, suntan preparations, face powders, soaps, lipsticks, toothpastes and also in some foods. Contact hypersensitivity to parabens is well known but there are no such reports in the Indian literature. The present study deals with the incidence of contact hypersensitivity to parabens at Allahabad.

Materials and Methods

Patients suspected to be having contact hypersensitivity to topical medicaments were included in this study. They were patch tested with commercially available topical medicaments as well as methyl and propyl parabens (5% in plastobase). Ethyl paraben could not be tested due to non-availability. Butyl and benzyl esters were not tested as these are hardly used in topical medicaments. The patch tests were carried out according to the standard procedure¹ and the reading was taken after 48 hours.

Results

Out of 100 patients tested with methyl and propyl parabens, positive reactions were observed in six cases. Two patients each showed positive reaction to methyl paraben and propyl paraben and two showed positive reactions to both of them. In 5 of these six patients, concomitant contact hypersensitivity to topical medicaments was also observed. Soframycin, econazole and nitrofurazone sensitivity was seen in 3 cases each, while neomycin, gentamicin, mercurochrome, savlon and dermoquinol positivity was found in one patient each. Two out of the three patients who showed positive reaction to econazole cream did not show positive reaction to 1% econazole in PEG 400. On the other hand, one out of the three soframycin positive cases did not show positive reaction to framycetin 20% in plastobase.

Comments

In 1960, Sarkany² from London, first showed that parabens used as preservatives in medicaments may also cause contact dermatitis. Schorr and Mohajerin³ reported the first case of paraben contact dermatitis in the United States. Paraben contact dermatitis is common in Europe. By 1963, Hjorth and Trolle Lassen⁴ had diagnosed more than 140 cases of paraben sensitivity at Finsen Institute in Copenhagen, Denmark. They ascribed this high incidence to the fact that fungicidal ointments containing 5 percent ethyl paraben are apparently potent

From the Department of Skin and VD, M.L.N. Medical College and Deys Medical Store Naini, Allahabad, India.

Address correspondence to : Dr. A. K. Bajaj, Professor Skin and V D, M.L.N. Medical College Allahabad-211 001, India.

contact sensitizers and are widely used in Denmark.

The incidence of paraben hypersensitivity from various parts of the world has generally been reported to be between 1-3 percent.⁴⁻⁷ These results are based on routine patch testing of all the patients with parabens. In our study, the incidence of paraben sensitivity was six percent. This incidence seems to be high but it is likely to be due to the fact that paraben testing was done in a select group of patients suspected to be having contact hypersensitivity to topical medicaments. Maucher⁸ recorded 45 (30%) positive to parabens out of 148 patients having stasis eczema and ulcers. This high incidence suggests that in selected groups sensitivity can be fairly high.

In the present study, 3 cases each showed positive reactions with econazole cream, soframycin cream and furacin ointment. As econazole is a recently introduced drug and two of these patients did not show positive reaction with econazole nitrate in PEG 400, it is very likely that econazole cream contains parabens and the positivity was due to parabens and not due to hypersensitivity to econazole. In the case of soframycin also, one patient did not show positivity with framycetin sulphate, implying that soframycin cream also contains paraben. Furacin sensitivity is even otherwise quite high,^{9,10} in India, so possibly, positivity was coincidental. It can further be substantiated by another report¹¹ in which positivity to furacin powder and ointment was found to be the same, excluding the possibility of paraben sensitivity contributing towards furacin hypersensitivity.

The negativity of soframycin and econazole creams in another three paraben sensitive cases is probably due to a much lower concentration of parabens in these creams as compared to the

test concentration. Low concentrations are known to give lower incidence of positive patch test reactions.⁴ The evidence of presence of parabens in the above mentioned medicaments is circumstantial.

Parabens are quite often used as preservatives in topical corticosteroid preparations. In such cases, it will be almost impossible to even suspect their presence by patch testing due to low concentration of the parabens and presence of the corticosteroid which will suppress the positive reaction.

The present study emphasizes the inclusion of parabens as a part of the patch test battery for topical medicaments. The study also suggests that it should be made imperative for the manufacturers to mention the presence or absence of parabens in their products so that cases of superimposed paraben dermatitis could be managed properly.

Acknowledgements

This study was conducted under the Department of Science and Technology, Government of India project "National Survey of Plants and other Antigens Causing Contact Dermatitis in India". The authors are grateful to Deys Medical Store Mfg (U.P.) Ltd Naini, Allahabad and Sarabhai Chemicals Baroda for supply of some of the testing material.

References

1. Pasricha JS and Sethi NC : Contact Dermatitis in India, Lyke Lab Publications, Bombay, 1981.
2. Sarkany I : Contact dermatitis from paraben, Brit J Dermatol, 1960; 72 : 345-347.
3. Schorr WP and Mohajerin AH : Paraben sensitivity, Arch Dermatol, 1966; 93 : 721-723.
4. Hjorth N and Trolle Lassen C : Skin reactions to ointment bases, Trans St John Hosp Derm Soc, 1963; 49 : 127-140.
5. Fregert S, Hjorth N, Magnusson B et al : Epidemiology of contact dermatitis, Trans St John Hosp Derm Soc, 1969; 55 : 17-35.

6. North American Contact Dermatitis Group(1972) : Epidemiology of contact dermatitis in North America, Arch Dermatol, 1973; 108 : 537-545.
7. Black H : Analysis of routine battery results in Auckland Skin Clinic, Contact Dermatitis News letter, 1972; 12 : 323-325.
8. Maucher OM : Beitrag Zur Oder Koplung Sallergic auf Parahydroxy benzoesteester, Berufsdermatosen, 1974; 22 : 183-187.
9. Pasricha JS and Guru B : Contact hypersensitivity to local antibacterial agents, Ind J Dermatol Venereol Leprol, 1981; 47 : 27-30.
10. Bajaj AK, Govil DC, Bajaj S et al : Contact hypersensitivity to topical antimicrobial and antifungal agents, Ind J Dermatol Venereol Leprol, 1982; 48 : 330-332.
11. Bajaj AK and Gupta SC : Contact hypersensitivity to topical antibacterial agents, Intern J Dermatol, (In Press).