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PREVALENCE OF CONTACT HYPERSENSITIVITY TO COMMON ANTISEPTICS, ANTIBACTERIALS AND ANTIFUNGALS IN NORMAL PERSONS

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Two hundred individuals including 127 apparently normal persons and 73 patients with non-eczematous minor dermatoses were patch tested with 26 commercially available topical antiseptic, antibacterial and antifungal preparations. Forty five persons showed 68 positive patch tests, 18 of which were positive for more than one preparation. Males and females showed positive patch test in 23.56 and 8.3% individuals respectively. Sensitivity to nitrofurazone (Furster), benzoic acid, sodium thiosulphate, Multifungin and oxytetracycline (Terramycin) was found in 15(7.5%), 13(6.5%), 8(4%) and 5(2.5%) persons respectively. The study highlights contact sensitivity to benzoic acid, sodium thiosulphate and hamycin for the first time. No person was found sensitive to sodium fusidate (Fucidin), gentamicin (Genticyn), tolnaftate (Tolnaderm), miconazole (Micogel), clotrimazole (Mycocid), savlon and gentian violet. In view of the possibility of contact sensitivity developing in large number of apparently normal persons (22.5%) to a number of commercially available topical preparations, the risk should be weighed against the benefits derived from their use.

Key words : Contact hypersensitivity, Antiseptics, Antibacterials, Antifungals, Normals.

Topical antiseptic, antibacterial and antifungal preparations are extensively used in the specialities of medicine and surgery. These are also indiscriminately used as household remedies. There is a considerable chance of the development of contact hypersensitivity to these preparations which has been amply documented.[1] Topical medicaments have been found to be responsible for 14-40% of cases of contact dermatitis.[1,2] However, no data is available on the prevalence of contact hypersensitivity to common commercially available antibacterial, antiseptic and antifungal substances in normal people, because most of the studies describe results in patients suspected to have such hypersensitivity. The study in normal individuals is important for assessing the therapeutic benefits versus the risk of contact hypersensitivity to a topical preparation.

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Materials and Methods

Two hundred and six persons were selected from among the patients attending the skin department. Only adults having no evidence of systemic disease and history of immunosuppressive therapy were included. An informed consent was taken. Patients with psycho-sexual problems, urethritis and patients' attendants constituted 130 subjects. However, some patients having non-eczematous minor dermatoses (76 cases) like dermatophyte infections, pityriasis versicolor, colloid milium, corns etc presenting for the first time and who had not taken any topical treatment in the recent past were also included.

Indigenous patch test unit resembling Finn Chamber[4] was used for patch testing. The unit consisted of 12 cm × 5 cm strip of Johnson's sticking plaster on which 7 mm diameter aluminium discs were placed in two rows at a distance of 2 cm from the centre of each other. Patch tests were carried out by the standard method.[5]

Patch test battery used is outlined in table I. Patch testing with individual components of commercial preparations was not carried out in this study.

Results

Two hundred and six persons (178 males and 28 females) with the age range of 19-60 years were patch tested. Six persons showing hypersensitivity to sticking plaster were excluded from this analysis. Sixty eight out of 5200 patches (1.3%) in 45 individuals (22.5%) showed definite positive reactions, there were 43 (23.56%) males and 2 (8.3%) females. The maximum number (15 cases, 7.5%) of positive patch tests were obtained with nitrofurazone (Furster),

Table I. Number of subjects giving positive reactions with each contactant in 200 cases.

Contactant	Normal group (127)	Minor dermatoses group (73)	Total number of positive reactions	Percent positive reactions
1. Control (empty aluminium disc)	—	—	—	—
2. Furster (Nitrofurazone 0.2%)	11	4	15	7.5
3. Neosporin (Polymyxin B sulphate 5000 u, zinc bacitracin 400 u, neomycin sulphate 3400 u/gm)	1	—	1	0.5
4. Fucidin (Sodium fusidate 2%)	—	—	—	—
5. Genticyn (Gentamicin sulphate 0.3%)	—	—	—	—
6. Soframycin (Framycetin sulphate 1%)	1	—	1	0.5
7. Triple sulpha (Sulphathiazole 3.42%, sulphacetamide 2.86%, N benzyl sulphanilamide 3.7%, urea 0.64%)	—	1	1	0.5
8. Terramycin (Oxytetracycline 1%)	3	2	5	2.5
9. Paraxim (Chloramphenicol 1%)	—	1	1	0.5
10. Dettol (Chloroxylenol 4.8%, terpeniol 9%, absolute alcohol 13.1%	1	1	2	1.0
11. Mercurochrome 1% aq	1	1	2	1.0
12. Savlon (Chlorhexidine HCl 0.1%, cetrimide 0.5%)	—	—	—	—
13. Acriflavine 1% aq	2	1	3	1.5
14. Econazole (Econazole nitrate 1%)	—	1	1	0.5
15. Gentian violet 1% aq	—	—	—	—
16. Dermoquinol (Quiniodochlor 4%)	1	—	1	0.5
17. Piodin (Povidione iodine 10%)	—	1	1	0.5
18. Tolnaderm (Tolnaftate 1%)	—	—	—	—
19. Benzoic acid 5% petrolatum	5	8	13	6.5
20. Micogel (Miconazole nitrate 2%)	—	—	—	—
21. Mycostatin (Nystatin 1 lac μ/gm)	1	—	1	0.5
22. Multifungin (5 bromosalicyl-4 chloranilide 2%, soventol salicylate 1%)	3	3	6	3.0
23. Hamycin (Hamycin 200,000 u/ml)	2	1	3	1.5
24. Sodium thiosulphate 20% aq	3	5	8	4.0
25. Mycocid (Clotrimazole 1%)	—	—	—	—
26. Betadine (Povidione iodine 5%)	—	1	1	0.5
27. Jadit (Buclosamide 10%, salicylic acid 2%)	2	—	2	1.0
Total number of positive reactions	37	31	68	—

while sodium fusidate (Fucidin), gentamicin (Genticyn), chlorhexidine (Savlon), tolnaftate (Tolnaderm), gentian violet, miconazole nitrate (Micogel) and clotrimazole (Mycocid) did not give any positive reaction. Benzoic acid, sodium thiosulphate, multifungin and oxytetracycline gave positive results in 6.5%, 4%, 3% and 2.5% respectively (Table I). Two (1%) individuals were positive to 4 substances and 4 (2%) to 3 substances each. Twelve (6%) individuals were positive to 2 substances and 27 (13.5%) to one drug each.

Comments

Topical antiseptics, antibacterials and antifungals are common causes of contact dermatitis. Common sensitising substances are nitrofurazone (46-77%),[6,7] neomycin (40-48%),[6,7] Multifungin (45%),[6] Mycocid (24%),[6] Jadit (22%),[6] Sofra-mycin (19-22%),[6,7] Dermoquinol (19%),[6] Terramycin (10-19%),[6,7] Triple sulpha (14%),[7] Genticyn (6-19%),[6,7] Micogel (12%),[6] Mercurochrome (9-14%),[6,7] tolnaftate (9%),[6] Acriflavine (6-13%),[6,7] Savlon (4.2-8%),[6,8] Betadine (7%),[6] and gentian violet (5-6%).[6,7] Occasional cases of sensitivity to Fucidin,[9,10] Dettol[11,12] and Nystatin[13,14,15] have also been reported.

The topical drugs causing hypersensitivity are likely to vary from time to time, depending upon the prescribing trends, availability and the frequency of their use at a given time. It is essential that studies are conducted regularly at different places in normal or near normal people to get an idea of the prevalent sensitivity for a given drug. Results in patients with suspected drug sensitivity will not give any clear-cut idea of the sensitisation potential of a given drug. It is also very important to take into account the total number of tubes dispensed to the actual number of reactions seen, because a commonly used preparation even with very low sensitisation potential is likely to cause frequent reactions.

Pasricha and Guru[7] obtained positive reactions with 0.2% nitrofurazone in 4.5% cases and with 0.35% neomycin in 27.2% of 22 controls. No increase in positivity rate was found with 20% neomycin in petrolatum compared to the available concentration of 0.35%. In the present study, 7.5% persons were sensitive to nitrofurazone which is comparable with the results found by Pasricha and Guru[7] but 0.5% sensitivity rate of neosporin is much less and difficult to compare.

Benzoic acid (6.5%), Sodium thiosulphate (4%) Multifungin (3%) and Terramycin (2.5%) were other common sensitisers. Acriflavine, Hamycin (1.5% each), Jadit, Dettol, mercurochrome (1% each), Soframycin, Triple sulpha, Paraxin, Econazole, Dermoquinol, Piodin, Nystatin and Betadine (0.5% each) were sensitisers of relatively low potential.

Benzoic acid was the second most frequent sensitising substance in this battery following Furster. No case of contact sensitivity to this substance has been reported before. Similarly, there is no mention of contact hypersensitivity to sodium thiosulphate which was found to be a sensitiser in 4% cases in this study. Hamycin showing sensitivity rate of 1.5% was another substance to which contact hypersensitivity has not been reported so far.

Considering the incidence of positivity obtained by earlier workers[6-8,12] for the commercially available preparations, the figures in the present study are much lower. It is not unexpected as normal and near normal individuals were studied. Our figures of 0.5% to 7.5% for various preparations seems much real, looking at the low incidence (1.8%)[3] of contact dermatitis in dermatological clinics, despite the unrestricted use of such preparations. Some of these reactions can be due to the bases or the preservatives rather than the actual drug.

Sensitivity to more than one drug was seen in 18 individuals including two with sensitivity

to 4 drugs each. Multiple drug sensitivity to topical preparations has been reported by other workers.[6,7]

In view of majority of substances showing some degree of sensitising potential, it is advisable that topical medicaments should be prescribed only for specific indications, avoiding their indiscriminate and avoidable use.

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