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CONTACT DERMATITIS DUE TO COSMETICS AND THEIR INGREDIENTS

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Patches of common cosmetics like lipstick, sindhoor, cold cream, eyebrow pencil, rouge, bindi and their ingredients including methyl paraben, colophony, para phenylene diamine, balsam peru, cetostearyl alcohol, formaldehyde, lanolin, beeswax and liquid paraffin were applied in 200 females. Ingredients of cosmetics showed more frequent sensitivity as compared to the cosmetics applied as such. Para phenylene diamine (35%) being the most common allergen followed by balsam peru (22.5%) and parabens (19.25%). The least common allergen was liquid paraffin (0.5%). Among cosmetics, the most common agent was sindhoor (5.5%) followed by lipstick (5.1%) cold cream (3.75%) rouge (2%), bindi (1.75%) and eyebrow pencil (1.5%).

Key Words : Cosmetics, Ingredients, Contact Dermatitis

Introduction

Most cosmetics are complex mixtures containing perfumes, preservatives, emulsifiers, stabilizers, various lipids, higher alcohols and other substances. These chemicals in cosmetics may produce primary irritant reactions, allergic dermatitis, photosensitivity and breakage of hair and nails.[1] Since most of the obvious irritating compounds are eliminated from the products by the manufacturers, the most common type of reaction from such cosmetics occurs due to allergic sensitization. Usually the perfume, preservative or emulsifying agents contained in cosmetics are responsible for allergic dermatitis.[2]

These constituents are formed of methyl paraben or ethyl paraben as preservatives, colophony as solidening agent, balsam peru as perfume fixative, beeswax as adhesive and emollient, liquid paraffin and yellow petrolatum as emollients and bases where as paraphenylene diamine is a major constitu of hair dyes.

Although, a large number of cosmet used in India are common to those used western countries like lipstick, rouge, eyebr pencil, but there are several others like bi and sindhoor (Kumkum) which are us exclusively in India. These cosmetics are us by almost all females and because of the o exposure to commercially available cosmet products, cosmetic allergy in females h surfaced as a dermatological and soci problem. This study was therefore undertak to evaluate the contact sensitivity pattern various cosmetics and their ingredients.

Materials and Methods

Covered patch testing was done in 20 female patients selected randomly from ski out patient department. These patients wer not suffering from an acute stage of allerg disorder or any active skin disease requirin medication with systemic administration o antihistaminics and/or corticosteroids. In eac case, a detailed history was recorded wit special reference to type of cosmetics use and allergic reaction to them in the past.

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Test meterial comprised of "Cosmetic Tray" containing following ingredients and commercially available cosmetics as such. (Cronin, 1980).[3]

Table I. List of Material patch tested

Methyl paraben	15%	in Petrolatum
Ethyl paraben	15%	in Petrolatum
Colophony	20%	in Petrolatum
PPD	1%	in Petrolatum
Balsam peru	25%	in Petrolatum
Cetostearyl alcohol	30%	in Petrolatum
Beeswax	As such	
Liquid paraffin	As such	
Aqua distillata	As such	(Control)
Yellow petrolatum	As such	(Control)
Sindhoor	2 brands used as such	
Creams	2 brands used as such	
Eyebrow pencil	1 brand used as such	
Rouge Powder Blusher	1 brand used as such	
Bindis	2 brand used as such	
Lipsticks	4 brand used as such	

In addition, patch tests were also done in 10 patients suspected to have suffered from allergic reaction to cosmetics. Patch testing was done according to standard technique given by Pasricha & Sethi (1981).[4]

Results

Out of 4410 patches tested, positive results were obtained in 382 (11.54%) in 105 out of 200 patients. The incidence of positivity and degree of sensitivity against various ingredients and cosmetics is shown in Table II.

Cosmetic sensitivity was influenced by various factors intrinsic to the patients like occupation, age, urban/rural status, menstrual status etc. It was more in working women specially beauticians, nurses and para-medical workers followed by housewives/girls, students etc. It was maximum among the age group

Table II. Showing incidence of positive patch tests against cosmetics and their ingredients.

Ingredients & Cosmetics		Degree of sensitivity				Total	
		+	++	+++	++++	Number	% age
Ingredients :							
Methyl paraben		14	22	1	-	37	18.5
Ethyl paraben		17	23	-	-	40	20.0
Colophony		14	19	1	-	34	17.0
PPD		21	41	6	2	70	35.0
Balsam Peru		10	25	10	-	45	22.5
Cetostearyl alcohol		10	14	-	-	24	12.0
Formaldehyde		3	9	1	-	13	6.5
Lanolin		6	18	-	-	14	7.0
Beeswax		4	3	-	-	7	3.5
Liquid paraffin		-	1	-	-	1	0.5
Cosmetics :							
Sindhoors	(2 brands)	8	13	1	-	22	5.5
Creams	(2 brands)	9	6	-	-	15	3.75
Eye brow pencil		3	-	-	-	3	1.5
Rouge		4	-	-	-	4	2.0
Bindi	(2 brands)	5	2	-	-	7	1.75
Lipstic	(4 brands)	33	7	1	-	41	5.1
Extra cosmetics used by patients		1	3	1	-	5	2.5
Total		162	196	22	2	382	

21-30 years. Cases residing in urban area showed more positivity (83.80%) as compared to rural area (16.19%). Secretory phase of menstrual cycle showed more positivity (40%) followed by proliferative phase (31%) and menstrual phase (19%). Amenorrhoeic cases (10%) due to various reasons showed less positivity.

Out of 105 patients showing positive patch tests, ingredients alone were responsible in 55, both ingredients and cosmetics in 47 and cosmetics alone in 3 patients only.

Multiple sensitivities were a common feature in most of the cases. Methyl paraben sensitivity was commonly associated vis-a-vis with ethyl paraben, cold creams with balsam peru, eyebrow pencil with para phenylene diamine, rouge with colophony. Lipstick sensitivity was associated with colophony in 6 cases, cetostearyl alcohol and balsam peru in 5 cases and lanolin in 1 case.

Comments

The finding of higher sensitivity (52.38%) against various ingredients than the cosmetics used as such, agrees with the results reported by Romaguera et al (1983).[5] This discrepancy can be explained on the basis of exposure to similar ingredients present in other products e.g. medicaments etc. and presence of ingredients in much lower concentration in finished products of cosmetics. Among the ingredients, PPD was dectected to be the commonest allergen (35%) as reported earlier by various workers, [5,6] which can again be explained on the basis of cross sensitivity against various other compounds e.g. azo and aniline dyes, local anaesthetics, sunscreens like para amino benzoic acid, sulphonamides, hydroquinones, parahydroxy benzoic acid esters, phenyl hydrazine ect.[7] Besides it is a strong sensitizer and even irritant under the covered patch test.

Positivity of patch to balsam of pe which is commonly used as a perfume fixa in the cosmetics is considered to be diagnos of perfume dermatitis. Positivity of 22.5% this study may be related to its exposure sources other than the cosmetics e.g. top medicaments etc.[8] Incidence of parab sensitivity was also found in consistence w earlier reports showing cross sensitivity w various esters.[9] Colophony (Rosin) constituent of rouge was found to be allerge in 17% cases, agreeing with the observatio of Harry (1963).[10] Cetostearyl alcohol being combination of cetyl and stearyl alcohols a forming a possible allergic component lanolin was detected to be associated wi lanolin sensitivity in 16.7% cases as report earliar.[11]

Sensitivity to formaldehyde is reported the range of 3.2% to 8.7%.[7,12] Where as this study we detected 6.5% cases, particular being common in medical personnel as see by Monica Agathos 1979.[12] Beeswa (Propolis) a constituent of lipstick wa associated with 1 case in which lipstick patc test was also positive. Its cross sensitivity balsam of peru was found in 3 out of 7 case

The minimum sensitivity was reporte for liquid paraffin (0.5%). As it is bland an occlusive, so it can be taken as a suitable bas in comparison to yellow petrolatum. The foregoing account is sufficient to suggest tha cosmetics should not be taken lightly

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