

Evaluation of Cosmetic Dermatitis in the Rohilkhand Region.

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ABSTRACT

Background: Cosmetics have been used since the oldest known civilizations, and nowadays almost everybody resorts to beauty products.. Reactions to cosmetics constitute a small but significant number of cases of contact dermatitis that can present with varied appearances. **Aims and objective:** evaluate cosmetic dermatitis using cosmetics. **Methods:** The study was performed over a period of 6 months, starting in April 2015 in the Rohilkhand medical college and hospital. 200 patients were selected in skin OPD. The patients filled in a self-administered questionnaire concerning their use of cosmetics and skin care products and reported suspected current or previous adverse reactions to such products. **Results:** The patch test is done female are more adverse reaction than male. In female eye make 12% bindi 3% ,soap 2% tooth paste 4% hair dye 23% lipstick 4% manicure 6% deodrants 8% nail polish 3% nail polish remover is 6% and shampoo is 1% adverse reaction. **Conclusion:** cosmetics causing dermatitis. It is more common in female as compare to female.

Keywords: dermatitis, cosmetics, hyperpigmentation, hypopigmentation..

INTRODUCTION

Cosmetics have been used since the oldest known civilizations, and nowadays almost everybody resorts to beauty products. Cosmetics are used by rubbed, poured, sprinkled or sprayed on the normal or previously altered human skin for the beautification and cleansing, promoting attractiveness or altering the appearance and are not intended to alter or interfere with the physiological competence of human skin or body.^[1] Reactions to cosmetics constitute a small but significant number of cases of contact dermatitis that can present with varied appearances. It is notable that most patients do not initially suspect a reaction to the cosmetic and are subsequently proven to have evoked allergic responses.^[2]

Cosmetics cause the allergic and non-allergic reaction, in allergic reaction are Contact allergic, dermatitis Photo allergic contact dermatitis, Contact urticaria, and in non-allergic reaction are Contact irritant dermatitis, Phototoxic contact dermatitis. Hyperpigmentation & hypopigmentation.

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MATERIALS AND METHODS

The study was performed over a period of 6 months, starting in April 2015 in the Rohilkhand medical college and hospital patient was selected in SKIN OPD. The study was approved by the medical ethics committee. The patients filled in a

self-administered questionnaire concerning their use of cosmetics and skin care products and reported suspected current or previous adverse reactions to such products.^[3] At the time of patch testing, the responsible dermatologist completed the questionnaire, inserting information about the location of the dermatitis and any history of atopy.

Ingredients of cosmetics:

1. Preservatives: Parabens (methyl, ethyl, propyl, butyl); formaldehyde; dowicil-200; bronopal; germall 115, II.
2. Dye: Para-phenylene diamine (primary intermediate in permanent dyes)
3. Organic alcohol: Abitol.
4. Emollient: Lanolin (wool alcohol); bees wax; isopropyl myristate; liquid paraffin.
5. Perfume fixative: Balsam of Peru; musk mix; fragrance mix (cinnamic aldehyde, cinnamic alcohol, eugenol etc.)
6. Solvent, Humectant: Propylene glycol.
7. Antioxidants: Butylated hydroxyanisole (BHA); butylated hydroxytoluene (BHT)
8. Solidening agents: Colophony

Product use on face hair, body, and nail:

Bindis: Bindi is a circular colorful mark applied on the forehead by Indian women. Earlier, the material most commonly used was kumkum. Nowadays, dyes are being used in powder or solution form. Some ladies use lipsticks on their forehead for a bindi. Sticker Bindi which consists of plastic material - polyvinyl chloride with resinous adhesive – para tertiary butyl phenol on one side has become fashionable. Contact Dermatitis may occur due to colophony, abitol (dihydroabetyl alcohol), monobenzene (antioxidant). Patch testing is done with adhesive side down of bindis.^[4]

Facial make-up bases and facial powder ingredients: These are applied to the skin to give an appearance of uniform color and texture. The main ingredients are titanium dioxide, PABA derivatives, fragrances, emulsifiers, preservatives, propylene glycol and lanolin.^[5] Powder preparations are considered best as they are less allergenic

Hair care products

Hair dyes – These are used to hide gray hair and for beautification, but in these dyes, many sensitizers are present these are: Paraphenylene diamine, Paratoluene diamine, Para aminophenol, Ammonia, Additives like pyrogallol, resorcinol, and hair colours have a low concentration of PPD and ammonia free colors are also available.

Both irritant and allergic contact dermatitis to hair dyes can occur. Usually middle aged and elderly individuals are predisposed. Allergic contact dermatitis is usually seen on upper eyelids, forehead, scalp and even the rest of the face. Rarely neck; upper extremities and trunk may be involved.

Hair bleaches: Usually contain hydrogen peroxide, ammonium persulphate which can cause urticaria type and allergic reactions.^[6]

Hair shampoos – They have a very short period with skin. Usually itching or stinging of eyes is the main complaints. The majority of shampoos are detergent based, containing sodium lauryl ether sulfate, perfumes, antidandruff agents such as selenium sulfide, zinc pyrithione, conditioners such as lanolin, polypeptides, solvents and surfactants. Clinically the pattern of contact dermatitis is similar to that of hair dyes.^[7]

Rouge or Blush: It is manufactured in various forms – powder, cream, liquid, stick or gel. Some people use lipsticks for the same. D & C yellow causes allergic reactions to rouges as well as to lipsticks.^[8]

Dentifrices: Dentifrices are the ingredients in toothpaste, tooth powder etc.

Abrasives 10-40 %- consist of dicalcium phosphate dihydrate, alumina trisilicate, magnesium trisilicate, silica gel causes tooth abrasion. Humectants Glycerol and sorbitol Causes diarrhoea. Detergents Sodium lauryl sulphate. Preservatives Benzoates. Colouring agents, Titanium dioxide flavours, preservative, colouring agents.

Clinical features of contact dermatitis due to dentifrices: Present as desquamation of lips and tongue, peri oral dermatitis, angular cheilitis and gingivitis.^[9]

Lipsticks: Allergic reactions to lipsticks were common due to dyes producing long-lasting deep colors such as D&C Red 21 (Eosin). However, nowadays, the lipsticks are of pale color, therefore, eosin is being used less frequently and in low concentrations. Other sensitizers are castor oil,

pigment solvents, antioxidants, sunscreens, lanolin fragrance, colophony and shellac (coating substance). Clinical presentation of lipstick cheilitis occurs on the vermilion borders of the lips, which may vary from a mild redness, scaling and fissuring to edematous-crusting condition. In some cases, it can lead to photo contact dermatitis, where in addition to it, the patient develops darkening of lips.^[10] To confirm allergic contact dermatitis to lipsticks, open patch and photo patch tests should be performed, “As is” with the lipsticks used by the patient.

After shave lotions: Mainly contain alcohol, aluminium chlorohydroxide, menthol, camphor and glycerine. Contact dermatitis to shaving preparations is mainly due to after shave lotions and perfume. Patch testing with shaving cream is done either with the finished product or with individual ingredients.^[11]

KAJAL AND SURMA: Traditional women use kajal and surma on the lid margin. There are mainly carbon compounds and surma contains mercury. Various eye makeup preparations are mascara, eyeliner, eye shadow, eyebrow pencil. A good history taking is important in patients with eyelid dermatitis because facial, hair and nail cosmetic reactions appear frequently on the eyelids. Various sensitizing preparations in eye cosmetics include: preservatives such as parabens, phenyl mercuric acetate, imidazolidinyl urea, Quaternium 15 or potassium sorbate, antioxidants, butylated hydroxytoluene, butylated hydroxy anisole propyl gallate, dibert- butyl hydroquinone, resins-colophony, dihydro- abidyl alcohol, lanolin. Patch testing with eye cosmetics may result in false negative result on the back. Provocative test on anti cubital fossa or on eyelid itself may ultimately prove the diagnosis. The positive patch test should be repeated for the confirmation and individual ingredient patch testing must be carried out wherever possible. Only 4% of reactions have been proven to be due to eye makeup.^[12]

Manicure products: Professional grooming of finger nails and toe nails is called manicure and pedicure respectively. The Products used in this are mainly: 1. Nail polish: Main allergen in nail polish is toluene – sulfonamide, formaldehyde resin. Clinical features of contact dermatitis include lesions mainly over the upper eyelids, lower half of face, sides of neck and upper chest.^[13] Ten percent toluene sulfonamide in petrolatum are used to perform a closed patch test. 2. Nail polish removers: Contain mainly acetone, alcohol, ethyl acetate, butyl acetate. Patch tests can be performed with the nail polish or nail polish remover as such but in open patch test with nail polish delayed occlusion patch test and by cup method with nail polish remover.

A patch test is useful in knowing the type of reaction to a particular cosmetic - whether irritant or allergic. Also, the standard test series can identify the agents causing them. Cosmetics can be classified according to their usage as "Leave - on" cosmetics such as lipsticks. Their patch test is done "As is". A second variety is the "wash-off" or "Rinse-off" cosmetics - such as shampoos. They are used in the concentration of 10%. Soaps and detergents are used in concentrations of 1% After performing the patch test the reactions are graded on second, fourth and seventh to tenth day depending on its severity. To interpret photo contact dermatitis, photo patch test is performed and is considered to be positive, if test site shows dermatitis on exposure to antigen and sunlight. There must be no reaction at the unexposed patch test and central site.^[14]

Repeated open application test: In this test, the suspected cosmetic is applied twice daily for 7 days or until an eczematous reaction occurs especially on the outer aspect of the upper arm. Usage test: If patch testing to a strongly suspected test substance is negative, the patients are asked to use the

preparation again routinely as they would normally use it especially bindis.

Elimination test: Fischer has suggested an elimination routine in diagnosis of reactions to cosmetics. All cosmetics are stopped except lipstick, which is allowed if the lips are problem free when dermatitis has cleared, one cosmetic at a time is tested/allowed. If a reaction occurs, the cosmetic used most recently is eliminated.^[16]

Safety testing: Is the demand of the day for cosmetics. The FDA accepts only animal safety data. The most widely used animal tests are the 'draize eye irritancy test' which involves placing drops of the substance in question into the eye of an albino rabbit. Any redness, swelling, cloudiness of the iris or corneal capacity to clear it is noted.^[15]

RESULTS

The reported daily use of cosmetics and skin care products for the whole study population (n ~ 200) is presented in [Table 1]. The products reported to be suspected of causing skin problems are listed in [Table 2].

Table 1: Reported daily use of different products.

Product	Females	Males
Eye make-up	64	00
Bindi	89	00
Soap	98	100
After shave	00	54
Tooth paste	100	89
Hair dye	35	67
Lip stick	88	00
Mani cure	24	2
Deodorants	33	56
Nail polish	68	00
Hair removal	12	00
Nail paint removal	32	00
Shampoo	92	88

After taking 200 patients of skin OPD the patch test is done female are more adverse reaction than males. In female eye make 12% bindi 3% ,soap 2% tooth paste 4% hair dye 23% lipstick 4%, manicure 6%,deodrants 8% nail polish 3% nail polish remover is 6% and shampoo is 1% adverse reaction. Females are not used after-shave that's why there is no adverse reaction.

In male patients soap 1% after shave 15% tooth paste 4% hair dye 26% deodorants 6% and shampoo 2% cause adverse reaction. In male patient there is no use of bindi lipstick eye make-up

manicure nail paint and remover is not used. Patients with present or previous atopic dermatitis reported significantly more adverse reactions those in the AR group had dermatitis on the face and neck region significantly more often than those in the No adverse group. There were no differences regarding other body locations.

Table 2: Products reported to be causing adverse skin reactions; percentage of persons reporting adverse skin reactions to cosmetics

Product	Females	Males
Eye make-up	12%	0%
Bindi	3%	0%
Soap	2%	1%
After shave	00	15%
Tooth paste	4%	4%
Hair dye	23%	26%
Lip stick	4%	0%
Mani cure	6%	0%
Deodorants	8%	6%
Nail polish	3%	0%
Hair removal	6%	0%
Nail paint removal	2%	00
Shampoo	1%	2%

DISCUSSION

This present study state that patients referred for standard patch testing have a large quantity of self-reported adverse reactions to cosmetics or skin care products. Adverse reactions were meaningfully associated with sex (females), atopic dermatitis, increased number of positive patch tests, and dermatitis on the face and neck, thus confirming previous reports. This can in part be explained by the higher age and the preponderance of women in this group, as contact dermatitis and contact allergy are more common among women, and are more common with increasing age.^[19,20] There were also differences in the reported use of cosmetics and skin care products. Although we cannot exclude a bias in the willingness of patients at the patch test clinics to participate in the study, our results do indicate that adverse reactions to cosmetics and skin care products can be an important aetiological and/or complicating factor in cases of suspected contact dermatitis. We found that atopy was more common in the adverse reactive group. It has been reported that the function of the skin barrier is defective in atopic dermatitis, increasing the risk of developing contact dermatitis of the irritant type. Atopy itself is not considered to be associated with an increased predisposition to develop contact allergy. However, it has been suggested that the combination of a defective barrier and a frequent application of skin care products and pharmaceuticals planned for skin treatment could increase the risk of developing contact allergy to such products. The repeated use of cosmetics and skin care products differed between the patient groups. The adverse reaction patient group reported a higher daily usage compared with all participants.

This indicates that an increased use of cosmetics carries increased risk for adverse effects. It has been shown that contact sensitivity to cosmetic-related allergens are increasing.^[17] Application of products or substances to the skin surface can elicit both irritant and allergic reactions. It is also conceivable that persons with known risk factors for contact dermatitis are more likely to experience adverse reactions to cosmetics and skin care products. In conclusion, patients referred for standard patch testing because of eczema report a high incidence of adverse effects to cosmetics or skin care products. This suggests that adverse reactions to such products can constitute a more serious aetiological and/or complicating factor for a current dermatitis than is commonly recognized. It is therefore important to include exposure to such products in the patient's case history and to discuss this aspect of the preventive information given to eczema patients.

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