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FEMALE FACIAL MELANOSIS IN INDIA : ROLE OF CONTACT SENSITIVITY

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Abstract

Background: The wish to get lighter skin in Asian women, in particular, is very high as it is believed to be an indication of superiority and higher socioeconomic status. Paradoxically there is sudden increase in the number of female patients seeking consultation for facial melanosis. We hereby report a series of such patients with an attempt to delineate the probable role of contact sensitivity .

Aim: To delineate the probable role of contact sensitivity in facial melanosis

Methods: Thirty three female patients, aged between 18 - 57yrs, with predominantly diffuse pigmentation of the face and neck(Fig. 1 a,b) were included in the study, carried out from May 2015 to September 2016.

Results: 21 out of 33 patch-tested patients showed positive reactions to various allergens

Limitations: The sample size is small to make a definite conclusion.

Conclusion: Whereas cosmetics are intended to improve the appearance of the skin or enhance the attractiveness of the users, paradoxically skin lightening creams have led to an epidemic of diffuse hyperpigmentation. Therefore, stringent regulations are needed, since such preparations should not be made available over the counter; moreover, mandatory labeling of the constituents should be required.

Key words: Cosmetics, Pigmented cosmetic dermatitis, Isoeugenol, Females Facial Melanosis, YlangYlang oil, Canangaodorata oil.

Introduction

The wish to get lighter skin in Asian women, in particular, is very high as it is believed to be an indication of superiority and higher socioeconomic status. Recently the spread of visual media even to the smaller towns of India as well as on the counter availability of large number of fairness creams have resulted in their increasing usage with very little information regarding the safety profile and side effects. Paradoxically there is sudden increase in the number of female patients seeking consultation for facial melanosis. We hereby report a series of such patients with an attempt to delineate the probable role of contact sensitivity .

Materials and Methods

Thirty three female patients, aged between 18 - 57yrs, with predominantly diffuse pigmentation of the face and neck(Fig. 1 a,b) were included in the study, carried out from May 2015 to September 2016. In some patients the volar aspect of the forearms (Fig.1c) or upper back of the trunk were also involved (Table 1).Case series is small, reason being only patients who agreed for patch testing were included. A small number of patients (*n* =7) had previously also suffered from mild dermatitis. The duration of hyperpigmentation varied from 6 month to 3 years.

All patients were patch tested with the Indian baseline series, the fragrance series (Chemotechnique Diagnostics, Vellinge, Sweden) and some also with their own products used.

The closed patches were applied on the back and occluded for 2 days, and the readings were taken on D 2 and 4 according to the ICDRG guidelines. In 6 patients, biopsy specimens were obtained from a pigmented area for histopathological examination. Photo Patch test could not be done because of non availability of Photo Patch test facility.

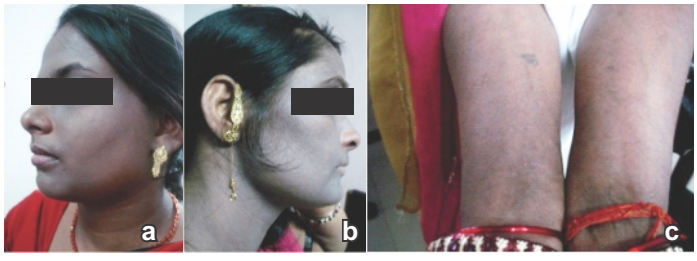

Fig No1 (a, b, c). Patient with predominantly diffuse pigmentation of the face and neck

Results

21 out of 33 patch-tested patients showed positive reactions to various allergens, the results of which are given in Tables 1 and 2. Most patients presented with contact sensitivity to isoeugenol (n=14) followed by Hydroquinone and Fragrance mix 1 (n=5), and *Canangaodorata* or YlangYlangOil (n=4). Among the

Table 1: The sites affected and positive patch-test results

Case No.	Age (years)	Affected Sites	Patch-test results
1.	35	Face, neck	Isoeugenol
2.	42	Face, neck, forearms	PPDA, Nickel, Isoeugenol, Frag Mix II
3.	28	Face, neck upper back	PPDA, Isoeugenol, Frag Mix II, Amyl cinnamic alcohol
4.	22	Face	Benzyl salicylate, HQ
5.	43	Face neck & foearm	FMI, isoeugenol, POM
6.	38	Face	Nickel, POM, Benzyl salicylate
7	36	Face,neck	Potassium dichromate, cobalt, isoeugenol
8	27	Face, neck forearms	FMI, isoeugenol, HICC, citral
9.	24	Face & neck	FMI, isoeugenol, HQ
10.	57	Face & neck	Nickel, POM, isoeugenol
11.	22	Face	PPDA, isoeugenol, coumarin, sandalwood
12.	39	Face	Potassium dichromate, FMI, colophonium,POM
13.	26	Face, neck & foearms	Farnesol, isoeugenol, POM, HQ
14.	35	Face & neck	Isoeugenol, *evernia prunastri* (oakmos absolute), *Canangaodorata* (YYO)
15.	18	Face & neck	Cobalt, colophonium, Nickel, FMI
16.	46	Face, neck forearms & upperback	YYO,cinnamic aldehyde,cinnamic alcohol, isoeugenol, HQ
17	33	Face & neck	Myroxeilon pereirae (Balsam Peru), YYO
18.	28	Face & neck	Isoeugenol, Santalum Album (sandalwood) oil
19.	22	Face & neck	Nickel, geraniol, HQ
20.	48	Face, neck & forearms	Isoeugenol, POM
21.	53	Face & neck	PPDA, colophonium, YYO

PPDA: Para-phenylenediamine; HICC: hydroxyisohexylcyclohexene carboxaldehyde; HQ: Hydroquinone; YYO: YlangYlang oil; POM: Patient own material; FMI: Fragrance Mix1; FM II: Fragrance Mix 2

Table 2: Number (Nr.) of positive patch-test reactions to the different series and the patients' own cosmetics

Indian Standard Series	Nr.	Fragrance Series	Nr.	Own cosmetics (POM)	Nr.
Nickel	5	Isoeugenol	14	Herbal Fairness cream	5
Potassiumdichromate	2	YlangYlang Oil	4	Fairness cream	1
Colophonium	3	Fragrance Mix II	2	Sunscreen gel	1
FragranceMix 1	5	Sandalwood oil	2		
PPDA	4	Benzyl Salicylate	2		
Balsam Peru	1	Cinnamal	1		
Cobalt	2	Cinnamic Alcohol	1		
HQ	5	Farnesol Geraniol Everniaprunastri	1 1		

fifteen patients tested with their personal products seven had a positive reaction,of which three were considered irritant. The biopsy specimens showed mild hyperkeratosis, occasional basal layer liquefaction degeneration along with accumulation of melanin pigment, and a mononuclear cell infiltrate in the upper dermis. However a band like infiltrate with lymphocytes and histiocytes, hypergranulosis, saw toothed appearance and acanthosis of epidermis, or Hyaline bodies were absent. (Figure 2)

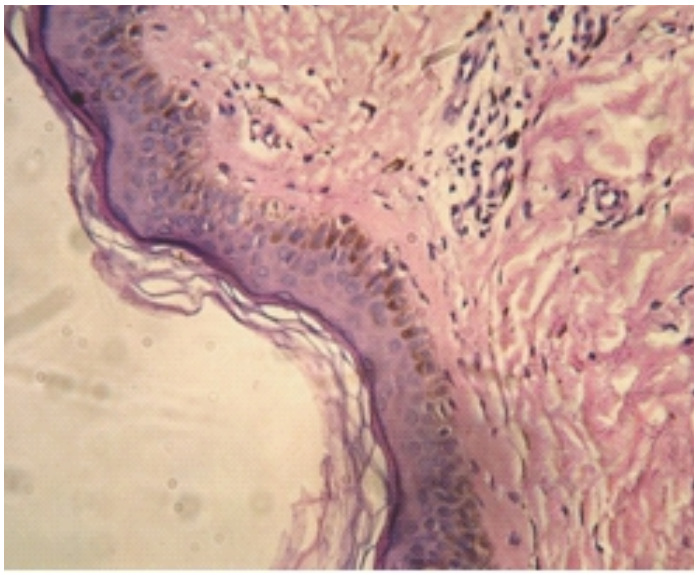

Fig-2 Histopathology showing liquefaction degeneration and accumulation of melanin pigment in the basal layer, and a sparse mononuclear infiltrate of the upper dermis (H&E staining) (40x).

Table 3: Number of patients with positive patch tests and of results of clinical follow-up after withdrawal of the allergens identified

Positive reactions	21
With follow up after 02yrs	15
With perceptible improvement after avoidance of allergens	9
Very little improvement	2
No improvement	4

Discussion

Widespread or localized hyperpigmentation may be associated with a large number of conditions (1). In our study, patients were having diffuse hyperpigmentation of the face and neck with history of application of various cosmetic creams, aromatic oils, or fragrances. In some patients mild dermatitis preceded the onset of hyperpigmentation.

The majority of our patients (21/33) showed positive patch-test reactions to various components of cosmetics, particularly the fragrance ingredients isoeugenol followed by Canangaodorata or YlangYlang Oil, and Fragrance Mix1, components which have been implicated to cause Pigmented Cosmetic Dermatitis (2). Five patients reacted to a popular brand of herbal fairness cream, found to contain geraniol, citronellol, Santalum Album or sandalwood oil, and eugenol, also known to produce hyperpigmentation (3, 4). The positive reactions to nickel and potassium dichromate in 5 and 2 patients respectively, were not considered relevant to the present condition.

According to Osmundsun (5) pigmented contact dermatitis

(PCD) is an idiosyncratic reaction. Although the exact mechanism by which the allergic reaction induces epidermal and dermal hyperpigmentation is still not known. It has been hypothesized that allergens responsible for PCD may have special affinity for melanin, inciting an inflammatory reaction around the melanocytes and around the cells incorporating melanin granules (6). Nakayama et al. (7) hypothesized that the concentration of allergens in commercial preparations were too low to produce spongiotic dermatitis but may give rise to a cytolytic type IV allergy at the basal layer of the epidermis, resulting in PCD. Similar histopathological features were observed in our cases as well.

In a recent Thai study(8) patients having hyperpigmentation due to Ashy dermatosis(AD), Lichen planuspigmentosus(LPP) and suspected pigmented contact dermatitis (PCD) were patch tested and almost half of them (21 of 43 ; 48.83 %) showed relevantly positive reactions. The positive reactions were seen in 40% cases of Ashy dermatosis, 36.36 % cases of LPP and 80% cases of PCD. Our study has almost similar results and follow up of our cases over 2 years with avoidance of putative allergens resulted in improvement of pigmentation in significant number of patients.It is suggested that patch testing in patients with hyperpigmentation will go a long way in proper management of these cases.

Conclusion

Whereas cosmetics are intended to improve the appearance of the skin or enhance the attractiveness of the users, paradoxically skin lightening creams have led to an epidemic of diffuse hyperpigmentation. Therefore, stringent regulations are needed, since such preparations should not be made available over the counter; moreover, mandatory labeling of the constituents should be required.

Patch testing, also with the personal products used, is a useful tool in identifying the etiology of female Facial Melanosis, since, at least in significant number of cases, elimination of the allergens identified resulted in clinical improvement.

Limitations

The sample size is small to make a definite conclusion.

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