Journal of Medical Implants & Surgery

Tamura, J Med Imp Surg 2022, 7:5

Mini Review Open Access

Cosmetic Contact Sensitivity in Patients with Melasma

Shozo Tamura*

Department of Gastroenterological Surgery, University of Tokyo, Japan

Abstract

Perhaps some of the melasma patients also have pigmented cosmetic dermatitis. But research on cosmetic contact sensitivity in melanomas is still lacking, notably in India. Between January and December 2012, consecutive melasma patients between the ages of 19 and 49 underwent sequential patch testing using the Indian Cosmetic and Fragrance Series, Indian Sunscreen Series, p-phenylenediamine, and the patient's own cosmetic items. Melasma could last anywhere between one month and twenty years. In 48 (72%), 18 (27%), and 1 (1%) patients, respectively, centrofacial, malar, and mandibular patterns were noted.

In 29 (43.3%) patients, the Indian Cosmetics and Fragrance Series produced favourable responses. In 15 (52%) of the patients, cetrimide was the most often detected contact sensitizer, followed by gallate mix in 9 (31%) and thiomersal in 7 (24%) of the patients. Only two of the 42 patients responded favourably to their own cosmetics, while the other five patients experienced irritation. Indian Sunscreen Series received no favourable feedback. A major cause of melasma that is not related to pregnancy, nursing, or hormone therapy is cosmetic contact sensitivity.

Keywords: Hyperpigmentation; Melanin; Melasma; Tyrosinase; Hypopigmenting agents; Nano carriers; Codrug; Retinoic acid.

Introduction

In the past several years, there has been a remarkable increase in use of cosmetics and skin care products for grooming both men and women around the world. Perhaps the most popular cosmetics for daily use, especially in India and other Asian nations are sunscreen and fairness creams/lotions. Cosmetics differ from pharmaceuticals in that they are applied topically to wash, scent, protect from body smells, and enhance beauty. They also lack diagnostic and therapeutic qualities. In addition, the cosmetic allergens may accidentally move from hands to more sensitive areas like eyelids or following touch with an allergen-contaminated surface or come into contact with skin via a product used by the partner or other people, aerosol vapours, or droplets. Patients occasionally report having multiple allergic responses to cosmetics or photosensitivity due to exposure to sunshine, especially ultraviolet (UV)-A, and photo allergens in cosmetic products [1].

They frequently cause contact reactions when combined with Myroxylon pereirae (Peru balsam) and/or scent additives (cinnamic acid, cinnamic aldehyde, and cinnamon oils). Additionally, benzophenones are a well-known contributor of photo allergies. However, the link between cosmetics and melasma is sporadic. A variation of pigmented contact dermatitis known as pigmented cosmetic dermatitis mostly affects the face and is caused by cosmetic components. Clinically, brown hyperpigmentation that is diffuse or patchy and covers the cheekbones, forehead, or the entire face makes it challenging to distinguish from melasma. But nothing is known about this element of melasma's sensitivity to cosmetic contact. We discuss our findings about aesthetic touch sensitivity in melasma patients in this pilot study [2].

Material and Methods

Melasma patients under the age of 18 were enrolled for the study between January and December 2012 after providing written, informed permission. The Institutional Ethics Committee and Institutional Protocol Review Board gave their approval to the study (Registration no. Women who were pregnant or nursing, those on oral contraceptives or other drugs, people with other pigmentary illnesses, endocrinopathies, or people with a family history of melasma were excluded from the study. Age, sex, occupation, melasma's development, progression, and clinical patterns, as well as its aggravating factors, cosmetics use, and prescription use, were all noted. Using the Finn chamber method and the Indian Cosmetic and Fragrance Series and Indian Sunscreen Series, consecutive patch tests were performed on each patient [3].

Additionally, p-phenylenediamine (PPD, 1.0% pet), a component of frequently used hair colouring solutions, was patch tested alongside the personal cosmetics that the patients had supplied. After 48 hours, the patients returned for the reading of the results after the patch tests had been put to their upper back (D2). The International Contact Dermatitis Research Group's criteria were used to rate the outcomes. For the purposes of the analysis, reactions that persisted on D3 were deemed favourable. Ten other subjects underwent comparable patch tests as controls. They did not have melasma despite applying similar cosmetics. The clinical relevance of positive patch test results was established [4].

Discussion

Melasma is a frequent form of acquired hypermelanosis that affects the face. Its persistent nature has a substantial impact on psychological health and quality of life. Melasma is a prevalent pigment problem among Indians and accounts for 0.25 to 4% of patients visited in dermatological clinics in South East Asia, while the precise prevalence of the condition is unknown. All racial groups are affected, but Hispanics and Asians are more common. The most common etiologic causes for melasma are genetic predisposition, pregnancy, oral contraceptives, endocrine disorders, hormone therapies, or exposure to UV light. In particular, phenothiazines, anticonvulsants, and phototoxic agent-

***Corresponding author:** Shozo Tamura, Department of Gastroenterological Surgery, University of Tokyo, Japan; Tel: 817986592431; E-mail: Tamura.shozo@gmail.com

Received: 29-Aug-2022, Manuscript No: jmis-22-75006, **Editor Assigned:** 01-Sep-2022, pre QC No: jmis-22-75006(PQ), **Reviewed:** 15-Sep-2022, QC No: jmis-22-75006, **Revised:** 20-Sep-2022, Manuscript No: jmis-22-75006(R), **Published:** 27-Sep-2022, DOI: 10.4172/jmis.1000143

Citation: Tamura S (2022) Cosmetic Contact Sensitivity in Patients with Melasma. J Med Imp Surg 7: 143.

containing medications have been related to melasma. However, the list of melasma causes has rarely included cosmetics [5].

The cheekbones, forehead, upper lip, nose, chin, and even the neck are frequently affected. However, the centrofacial, malar, and mandibular clinical patterns are three that stand out. In two independent studies, the most prevalent centrofacial pattern was observed in 55% and 75% of patients, while the malar pattern and the mandibular pattern were observed in 43% and 24%, 2% and 1.5%, and 2% and 1.5% of patients, respectively. Males account for only 10% of occurrences of melasma, or possibly men consult dermatologists less frequently for cosmetic reasons. It almost never appears before puberty. In our study, men made up only 18% of the total cases, compared to 10% in the earlier study. Similar to previous studies, our patients' centrofacial pattern was present in 48 (71.6%), malar pattern in 18 (26.8%), and mandibular pattern in 1 (1.4%) individuals [6].

Excipients are inert chemicals used in product formulations to solubilize, emulsify, sequester, thicken foam, lubricate, or colour the active ingredient. However, when used at higher quantities, especially in areas of direct contact with the allergen-containing items, they might cause allergic contact dermatitis or function as irritants. Cetrimide patch test results from our patients showed that they were using a variety of facial cosmetics, including cold creams, fairness creams, and antiseptic soaps, face wash/scrubs, shaving creams, and aftershave lotions [7]. A male patient who tested positive for cetrimide also described an irritating response to aftershave lotion. Given the prevalence of these compounds in cosmetic goods, it might be challenging to identify the particular allergen in suspected cosmetics. Dodecyl gallate, octyl gallate, and propyl gallate are antioxidant compounds used as preservatives in foods, topical pharmaceutical preparations, and cosmetics (lipstick, liposome-containing creams, body lotions, facial moisturisers, facial cleansers, hair conditioners, and foundation lotions). The increase in propyl gallate allergy seen in patients who underwent patch testing from 1988 to 2005 has been linked to the usage of lotions that contain liposomes. In 31% of our patients who had been using various facial cosmetics/skin care products, gallate mix was the second most often allergen to provide beneficial results [8].

While organic mercury compounds (ethyl mercury or thiomersal, phenyl mercuric salts) are used as preservatives in cosmetics, eye drops, contact lens solutions, vaccines, and antiseptics, inorganic mercury compounds (ammoniated mercury) are typically found in skin lightening soaps and fairness creams. Thiomersal is a rare allergen whose reported contact sensitivity in people with pigmented cosmetic dermatitis or cosmetic dermatoses ranges from 8% to 77%. Nevertheless, caution is advised when interpreting a positive patch test reaction to thiomersal because the primary sensitization could have originated from a child's vaccine. However, prolonged topical mercury usage may result in enhanced pigmentation because the dermis accumulates mercury granules via absorption through hair follicles and sebaceous glands [9].

Another patient was using a variety of facial creams and had positive patch test results for phenyl salicylate, chloroacetamide, and cetrimide. Preparations for sunscreen, face and hand creams, mouthwashes, and preservatives all contain phenyl salicylate as a preservative, alcohol denaturant, and scent component. It has a lovely scent that is slightly reminiscent of wintergreen oil. There have been cases of cheilitis caused by lip balms containing phenyl salicylate, and both the lip balm and the phenyl salicylate produced positive results on patch tests. However, the cosmetic creams our patient used had no positive effects. PPD is a potent sensitizer, and it can be found in temporary tattoos, black rubber, textile or fur dyes, photocopier inks, and printing inks.

Although none of the patient's own cosmetics in our trial evoked a good response, it's possible that our patient was already sensitive due to previously utilised medications or cosmetics. In a research from Israel, 244 individuals with cosmetic contact dermatitis exhibited sensitivity to isopropyl myristate, an emollient, fragrance, and skin-conditioning agent, at a rate of 1.2%. Despite the fact that isopropyl myristate was one of the listed ingredients in "Fair & Lovely" cream, which our patient had been using for more than 6 years, she did not experience a positive reaction to the cosmetic product itself, even though she had a positive patch test reaction to isopropyl myristate. Perhaps the amount of this chemical in the completed cosmetics product is substantially smaller than the amount used for patch testing [10].

Overall, it was shown that when patch tested as such in our 42 patients, there was dissociation between the outcomes from specific cosmetics constituents and the cosmetic product. Reported a similar observation, that cosmetic ingredient exhibited more frequent sensitivity than cosmetics applied such as possibly. As a result of exposure to compounds present in completed products and cosmetics at much lower concentrations than those found in other items and medications. Additionally, the majority of the contents are typically not listed on the container by manufacturers. This was clearly demonstrated in a study of allergic contact dermatitis caused by gallates, and one of the goods suspected of doing so was a skin restoration cream. Gallates were not listed as an ingredient in the current packaging's ingredient list [11].

Overall, it was shown that when patch tested as such in our 42 patients, there was dissociation between the outcomes from specific cosmetics constituents and the cosmetic product. Reported a similar observation that cosmetic ingredient exhibited more frequent sensitivity than cosmetics applied as such as possible, as a result of exposure to compound present in completed products and cosmetics at much lower concentrations as those found in other items and medications. Additionally, the majority of the contents are typically not listed on the container by manufacturers. The researchers were unable to determine if the product's formulation had altered or its ingredients were present in such trace amounts that their names had been removed from the ingredient list. It's interesting to note that none of our patients reported any contact sensitivity symptoms from their cosmetics or linked their melasma to cosmetic use. Some individuals may have barely perceptible symptoms of previous dermatitis, while others may not experience any skin changes or irritation related to the use of cosmetics before or during the development of the pigmentation [12].

Conclusion

When melasma is not connected to pregnancy, lactation, or hormone therapy, pigmented cosmetic dermatitis and cosmetics contact sensitivity should be taken into account as causative variables. However, some of these cases with a diffuse to reticulated pattern of hyperpigmentation that is clinically characterised as melasma and is brown, slate-gray, gray-brown, red-brown, or blue-brown depending on the causal agent, may actually be caused by pigmented cosmetic dermatitis. It's also possible that positive patch test findings for different cosmetics or their listed or undeclared substances are coincidental or false positives, although as has been suggested, the hyperpigmentation is largely post-inflammatory.

The pigmentation only gets darker after exposure to the sun.

Therefore, the cosmetics may result in basal layer cytolysis and melanin incontinence after an irritating reaction or after absorption of an allergen from daily usage in amounts high enough to trigger contact hypersensitivity. The significance of favourable reactions may not always be known because most of the components in cosmetic products are not listed by manufacturers. Additionally, the inclusion of chemicals in completed cosmetic goods at considerably lower concentrations may account for the dissociation between the patch test results from individual cosmetics ingredients and the cosmetic product when examined as such. Avoiding cosmetic contact hypersensitivity may be the first step in melasma prevention or treatment.

Conflict of Interests

None

Acknowledgement

None

References

1. Boonchai W, Desomchoke P, Iamtharachai R (2011) Trend of contact allergy to cosmetic ingredients in Thais over a period of 10 years. Contact Derm 65: 311-316.
2. Rietschel RL, Fowler JF (2008) Practical aspects of patch testing in Fisher's Textbook of Contact. Contact Derm 43:11-29.
3. Tomar J, Jain VK, Aggarwal K, Dayal S, Gupta S et al (2005)
4. Smita G (2011) Study of pigmented cosmetic dermatitis, poster presentation. Pigment Cell Melanoma Res 24:742-863.
5. Mehta V, Nayak S, Balachandran C (2010) Pigmented contact cheilitis to paraphenylenediamine. Indian J Dermatol 55: 119-120.
6. Trattner A, Farchi Y, David M (2002) Cosmetics patch tests. Contact Derm 47:180-181.
7. Ferreira A, Freire E, Polonini H, Da Silva P, Brandão M et al (2018) Anti-aging effects of monomethylsilanetriol and maltodextrin-stabilized orthosilicic acid on nails, skin and hair. J Cosmet Sci 5: 41.
8. Saeedi M, Eslamifar M, Khezri K (2019) Kojic acid applications in cosmetic and pharmaceutical preparations. Biomed Pharmacother 110: 582-593.
9. Owolabi JO, Fabiyi OS, Adelakin LA, Ekwerike MC (2020) Effects of skin lightening cream agents - hydroquinone and kojic acid, on the skin of adult female experimental rats. Clin Cosmet Investig. Derm 13: 283-289.
10. Lim CHL, Stapleton F, Mehta JS (2019) A review of cosmetic contact lens infections. J Ophthalmic Vis Res 33:78-86.
11. Lieu TJ, Pandya AG (2012) Melasma Quality of Life Measures. Derm C 30:269-280.
12. Kim SJ, Park JY, Shibata T, Fujiwara R, Kang HY (2016) Efficacy and possible mechanisms of topical tranexamic acid in melasma. Clin Exp Dermatol. 41:480-485.