PPE dermatitis in Skin of Color during the COVID-19 pandemic

Geeta Ahuja BS, Sandy Li AB

Affiliations: Howard University College of Medicine, Washington, District of Columbia, USA

Corresponding Author: Geeta Ahuja, 520 West Street NW, Washington, DC 20059, Tel: 202-865-6100, Email: Geeta.ahuja203@gmail.com

Keywords: dermatitis, COVID-19, hyperpigmentation, hypersensitivity, melanin

To the Editor:

During the Coronavirus disease 2019 (COVID-19) pandemic, frontline essential workers were required to increase hand hygiene measures and use personal protective equipment (PPE) to decrease viral transmission. The use of PPE for extended periods has caused an increase in PPE-related occupational dermatoses such as allergic and irritant contact dermatitis. Allergic contact dermatitis is a delayed type hypersensitivity skin reaction related to an allergen. Irritant contact dermatitis, the most common occupational skin disease, is a localized cytotoxic skin reaction related to chemical or physical irritants.

Types of PPE available include gowns, gloves, medical masks, respirators, and protective eyewear. Each has potential allergens or irritants that cause dermatitis in facial and retroauricular areas. Examples include Solvent Orange 60 in goggle frames [1,2] and dibutyl thiourea and thiurams in elastic bands of face shields [3,4]. Irritants include ear loops of the mask [5] and the mask itself [6]. Preexisting dermatologic conditions such as seborrheic dermatitis, atopic dermatitis, or chronic urticaria are also exacerbated by PPE dermatitis [5].

Currently, awareness of the varying manifestations of PPE occupational dermatitis in Skin of Color is important. Dermatological disorders can present differently in Skin of Color [7]. However, there is a lack of research into Skin of Color which leads to diagnostic delay and error, such as in the case of COVID-19 skin manifestations [8]. In addition, some dermatological conditions are more commonly seen in Skin of Color, such as eczematous dermatitis and acne vulgaris [9].

There also exists an association of race and allergen response in patients with allergic contact dermatitis. Compared to White patients, Black patients have more reactions to rubber accelerators such as thiuram [10]. As mentioned earlier, thiurams are present in rubber material such as the bands used for face masks or face shields.

Melanated skin is prone to developing postinflammatory hyperpigmentation (PIH) after skin inflammation or injury, such as from extended PPE use [11]. Postinflammatory hyperpigmentation appears as irregular, hyperpigmented macules or patches distributed in the area of inflammation or injury. The pigmentation is typically brown, tan, or dark brown and can last for months to years and generally slowly resolves after the underlying inflammatory cause is resolved [12,13].

The most common causes of PIH in Skin of Color are acne vulgaris, atopic dermatitis, and impetigo [11]. Contact dermatitis is implicated in the development of secondary PIH as well [12,14]. Since contact and atopic dermatitis are frequent sequelae of PPE dermatitis, they can thus be postulated to lead to PIH after PPE use in Skin of Color.

With regard to management, PIH is typically dealt with using a stepwise approach and appropriate patient education. The causative inflammatory condition must be addressed first, then topical lightening therapy can be employed, followed by chemical peels or laser therapy for refractory situations [11].

Since there are many Skin of Color frontline workers, it is imperative to be aware of the differing presentations in this population and their management. People of color are disproportionately working essential frontline jobs, including those in healthcare, transportation, and public works. Together, Black and Latino or Hispanic workers make up 33.8% of frontline workers [15]. Because some preexisting dermatological conditions are more common in Skin of Color, these patients are predisposed to worse outcomes after PPE use.

Occupational dermatitis related to PPE use is a growing concern during the COVID-19 pandemic onwards. Taking breaks from PPE use when possible is one preventive measure. Wearing properly fitted masks to avoid sustained friction and alternatives to ear-loop masks, such as headband masks or face mask clip holders, are also options. Washing the face and retroauricular area with a gentle cleanser, moisturizing daily, and using sunscreen are other general tips to avoid occupational dermatitis. Patient and provider education is critical to ensure timely diagnosis and management of this condition, especially in Skin of Color related to the diversity of the essential workforce.

Another consideration would be exploration of the use of traditional remedies for dermatosis management such as in African, Asian, and Hispanic cultures [16]. However, there is a need for more research on alternative medicine practices. With proper measures, PPE dermatitis can be prevented and minimized with better long-term outcomes for frontline essential workers who are most vulnerable during the COVID-19 pandemic.

Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Situm M, Lugović-Mihić L, Bulat V, et al. Dermatological aspects of contact dermatitis from eyeglass frames and optical materials. *Coll Antropol.* 2013;37 Suppl 1:19-24. [PMID: 23837217].
2. Shono, M, Numata, M, Sasaki, K. Allergic contact dermatitis from Solvent Orange 60 in spectacle frames. *J Cutan Immunol Allergy*. 2019;2:44-48. [PMID: 29265444].
3. Kanerva L, Estlander T, Alanko K, Jolanki R. Occupational airborne allergic contact dermatitis from dibutylthiourea. *Contact Derm.* 1998;38:347-348. [PMID: 9687044].
4. Pak VM, Watkins M, Green-McKenzie J. What is the role of thiurams in allergy to natural rubber latex products?. *J Occup Environ Med.* 2012;54:649-650. [PMID: 22513655].
5. Bothra A, Das S, Singh M, Pawar M, Maheswari A. Retroauricular dermatitis with vehement use of ear loop face masks during COVID-19 pandemic. *J Eur Acad Dermatol Venereol.* 2020;34:e549-e552. [PMID: 32491204].
6. Foo CC, Goon AT, Leow YH, Goh CL. Adverse skin reactions to personal protective equipment against severe acute respiratory syndrome--a descriptive study in Singapore. *Contact Derm.* 2006;55:291-294. [PMID: 17026695].
7. Kundu RV, Patterson S. Dermatologic conditions in Skin of Color: part I. Special considerations for common skin disorders. *Am Fam Physician.* 2013;87:850-856. [PMID: 23939567].
8. Lester JC, Jia JL, Zhang L, Okoye GA, Linos E. Absence of images of skin of colour in publications of COVID-19 skin manifestations. *Br J Dermatol.* 2020;183:593-595. [PMID: 32471009].
9. Taylor SC. Epidemiology of skin diseases in people of color. *Cutis.* 2003;71:271-275. [PMID: 12729089].
10. Deleo VA, Alexis A, Warshaw EM, et al. The Association of Race/Ethnicity and Patch Test Results: North American Contact Dermatitis Group, 1998-2006. *Dermatitis.* 2016;27:288-292. [PMID: 27649352].
11. Lawrence E, Al Aboud KM. Postinflammatory Hyperpigmentation. In: StatPearls [Internet]. StatPearls Publishing; 2020. [PMID: 23939567].
12. Davis EC, Callender VD. Postinflammatory hyperpigmentation: a review of the epidemiology, clinical features, and treatment options in Skin of Color. *J Clin Aesthet Dermatol.* 2010;3:20-31. [PMID: 20725554].
13. Rossi AM, Perez MI. Treatment of hyperpigmentation. *Facial Plast Surg Clin North Am.* 2011;19:313-24. [PMID: 21763992].
14. Taylor S, Grimes P, Lim J, Im S, Lui H. Postinflammatory hyperpigmentation. *J Cutan Med Surg.* 2009;13:183-91. [PMID: 19706225].
15. Tomer A, Kane J. To protect frontline workers during and after COVID-19, we must define who they are. Brookings. 2021. https://www.brookings.edu/research/to-protect-frontline-workers-during-and-after-covid-19-we-must-define-who-they-are/. Accessed on April 20, 2021.
16. Kaufman BP, Guttman-Yassky E, Alexis AF. Atopic dermatitis in diverse racial and ethnic groups-Variations in epidemiology, genetics, clinical presentation and treatment. *Exp Dermatol.* 2018;27:340-357. [PMID: 29457272].