

"White reaction to blue": A contact vitiligo due to Disperse Blue in surgical mask

Feriel Amri, Mouna Korbi , Belhadjali Hichem, Rym Hadhri, Sana Bouzid, Monia Youssef, Jameleddine Zili

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The massive use of personal protective equipment during the coronavirus disease 2019 (COVID-19) pandemic has shed light on their adverse cutaneous reactions.¹⁻³ Masks, the symbol of the "COVID-era," can lead to a variety of skin damages.^{2, 3} Recently, Sinha et al have introduced the term of "mask vitiligo" to describe a facial vitiligo limited to skin sites in contact with surgical masks.⁴ Here, we report the case of a "mask vitiligo" induced by contact reaction to Disperse Blue in surgical blue masks.

CASE REPORT

A 50-year-old woman, with no relevant medical history, presented with perioral macular depigmentation. The lesions appeared progressively few weeks after wearing surgical blue masks. The patient, a full-time cleaning lady in a hospital, wore the mask at work and for additional hours at home (almost 7 hours daily for many consecutive days). No associated itching or burning facial sensation or erythema was reported. On dermatological examination, we noted achromic well-defined macules accentuated under Wood's lamp (Figure [1A-D](#)). Histopathological examination of skin biopsy confirmed the absence of melanocytes in the epidermis (Figure [2A,B](#)). Based on clinical assumptions and for economic reasons, we initially only tested cobalt, formaldehyde, Textile Dye Mix, and Disperse Blue Mix (All from Chemotechnique Diagnostics, Vellinge, Sweden). Semiopen tests with different humidified fragments of the blue surgical mask were also conducted. The results were assessed after day (D) 2, D3, and D7, according to ICDRG guidelines, which were positive (++) to Disperse Blue Mix (1% pet.; Figure [2C](#)). Detailed patch testing with different components of the mix from the textile dye series was performed, revealing a positive reaction to Disperse Blue 124 (1% pet.; Figure [2D](#)). Sadly, due to the poor labelling of masks, we were not able to identify the exact components of the masks used by the patient. Despite repeated requests, the manufacturers did not respond to our queries regarding the exact chemical composition of the masks. However, we proposed the discontinuation of the blue surgical mask and the use of only white N95 mask (FFP2), which resulted in clinical

improvement within 1 month (Figure 1E,F).

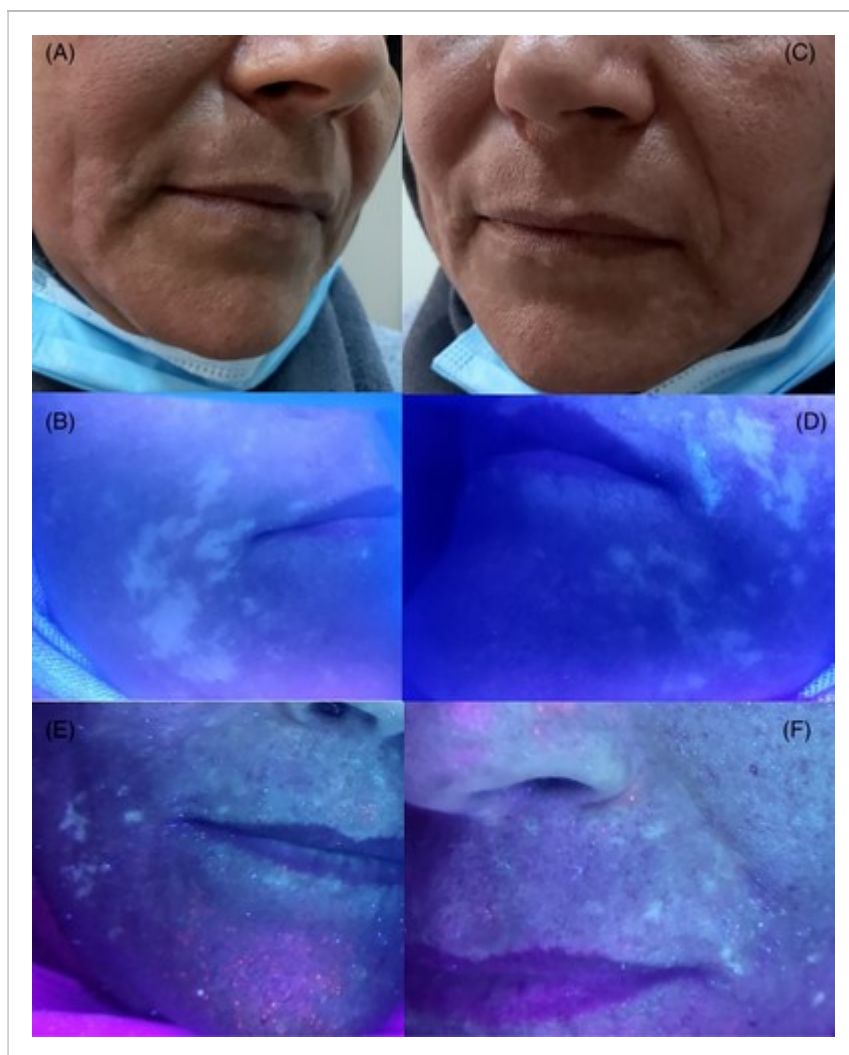


FIGURE 1

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(A,C) Perioral achromic well-defined macules; (B,D) accentuated depigmentation under Wood's lamp examination; (E,F) Clinical improvement assessed by examination with Wood's lamp

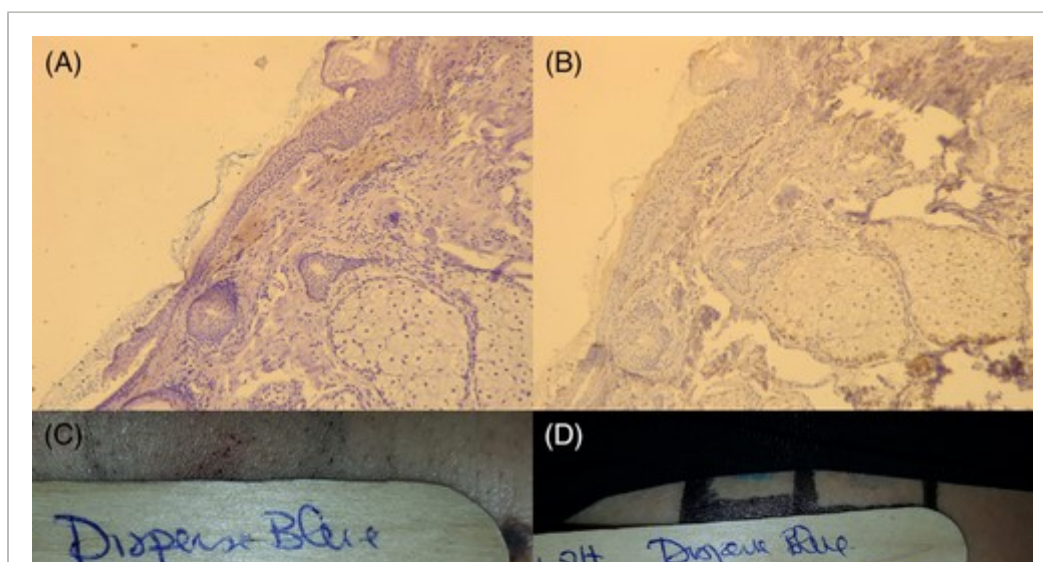




FIGURE 2

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Absence of melanocytes in the epidermis confirmed by immunostaining for (A) Melan-A and (B) HMB45 (haematoxylin eosin $\times 100$). Positive patch test to (C) Disperse Blue Mix and (D) Disperse Blue 124

DISCUSSION

We diagnosed the present case as “contact vitiligo” based on the anatomical distribution of depigmentation, the results of patch tests, and the clinical improvement after discontinuation of the blue mask.⁵ Contact vitiligo is an acquired form of skin depigmentation caused by certain chemicals that are toxic to melanocytes.^{5,6} To the best of our knowledge, textile dye has never been associated with contact vitiligo.⁶ Moreover, even the terminology is conflicting, using different terms for the same condition (“contact vitiligo” or “contact leucoderma” or “occupational vitiligo”). This condition appears to be identical to vitiligo. We think, in accordance with the hypothesis of Ju et al,⁵ that certain allergens (Disperse Blue 124 in our case) may induce oxidative stress on melanocytes that lead to destruction. Humidity and maceration under the mask could be precipitating factors. Our patient did not present any erythema or pruritus or burning facial sensation, which may help to rule out the diagnosis of frictional dermatitis from the surgical masks, with subsequent koebnerization leading to vitiligo, as reported in the case by Sinha et al.^{1,4} To conclude, clinicians should be aware of the new entity “mask vitiligo” that may be due to koebnerization from frictional dermatitis and/or contact leucoderma.

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AUTHOR CONTRIBUTIONS

Mouna Korbi: Conceptualization (equal); investigation (equal); methodology (equal); supervision (equal); validation (equal). **Feriel Amri:** Investigation (equal). **Belhadjali Hichem:** Investigation (equal); methodology (equal); validation (equal). **Rym hadhri:** Investigation (equal); validation (equal). **sana bouzid:** Investigation (equal). **Monia Youssef:** Validation (equal). **Jameleddine Zili:** Validation (equal).

REFERENCES



- 1 Sinha S, Sardana K. Contact leukoderma following irritant contact dermatitis to an isopropanol-based hand rub: a consequence of rigorous hand hygiene. *Contact Dermatitis*. 2020; **84**(5): 346-348. doi:[10.1111/cod.13743](https://doi.org/10.1111/cod.13743)
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- 2 Bhatia R, Sindhuja T, Bhatia S, et al. Iatrogenic dermatitis in times of COVID-19: a pandemic within a pandemic. *J Eur Acad Dermatol Venereol*. 2020; **34**(10): e563- e566. doi:[10.1111/jdv.16710](https://doi.org/10.1111/jdv.16710)
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- 3 Yu J, Chen JK, Mowad CM, et al. Occupational dermatitis to facial personal protective equipment in health care workers: a systematic review. *J Am Acad Dermatol*. 2020; **84**(2): 486- 494. doi:[10.1016/j.jaad.2020.09.074](https://doi.org/10.1016/j.jaad.2020.09.074)
[Crossref](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

- 4 Sinha S, Savitha B, Sardana K. “Mask vitiligo” secondary to frictional dermatitis from surgical masks. *Contact Dermatitis*. 2021; **85**(1): 121- 123. doi:[10.1111/cod.13813](https://doi.org/10.1111/cod.13813)
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- 5 Ju HJ, Lee JH, Kim GM, Park CJ, Bae JM. Contact vitiligo induced by rubber ear loops from a disposable sanitary mask. *Eur J Dermatol*. 2018; **28**(5): 690- 691. doi:[10.1684/ejd.2018.3350](https://doi.org/10.1684/ejd.2018.3350)
[Crossref](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

- 6 Boissy RE, Manga P. On the etiology of contact /occupational vitiligo. Pigmentary. *Cell Res*. 2004; **17**(3): 208- 214. doi:[10.1111/j.1600-0749.2004.00130.x](https://doi.org/10.1111/j.1600-0749.2004.00130.x)
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