characterized by an exaggerated inflammatory response. Another experiment in mouse has documented an inhibitory effect of apremilast on the release of profibrotic cytokine from macrophages, including interleukin-6. During COVID19, pneumonia has been documented a ‘cytokines storm’, with markedly higher levels of IL-6, and TNF-α, suggesting the use of interleukin-6 receptor blocker tocilizumab in severe cases. Recently, another Italian psoriasis patient contracting COVID-19 under IL-23 inhibitor treatment (guselkumab) has been reported, and completely recovered from the infection.

From our experience, apremilast confirms its safety in very critical patients with severe infections, including COVID-19. Its efficacy in our sub-erythrodermic psoriasis was not completely satisfactory, but other treatments were contraindicated for the recurrent brain oligodendroglioma. Further studies are warrant to explore the intriguing immune modulating activities of this very manageable drug.

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**References**

1. Gisondi P, Piaserico S, Conti A, Naldi L. Dermatologists and SARS-CoV-2: The impact of the pandemic on daily practice. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16515. [Epub ahead of print].

2. Tartari F, Guglielmo A, Fuligni F, Pileri A. Changes in emergency service access after spread of COVID19 across Italy. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16553. [Epub ahead of print].

3. Radi G, Diotallevi F, Campanati A, Offidani A. Global coronavirus pandemic (2019-nCoV): implication for an Italian medium size dermatological clinic of a II level hospital. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16386. [Epub ahead of print].

4. Atzori L, Mugheedu L, Sanna, L, Atzori.* Correspondence: L. Atzori. E-mail: atzoril@unic.it

5. Zerilli T, Ocheretyaner E. Apremilast (Otezla): a new oral treatment for adults with psoriasis and psoriatic arthritis. Pharm Ther 2015; 40: 459–506.

6. Sp R Shah VV, Wu Jj. Apremilast for a psoriasis patient with HIV and hepatitis C. J Eur Acad Dermatol Venereol 2017; 31: e481–e482.

7. Imam F, Al-Harbi NO, Al-Harbi MM et al. Apremilast ameliorates carfilzomib-induced pulmonary inflammation and vascular injuries. Int Immunopharmacol 2019; 66: 260–266.

8. Maier C, Ramming A, Bergmann C et al. Inhibition of phosphodiesterase 4 (PDE4) reduces dermal fibrosis by interfering with the release of interleukin-6 from M2 macrophages. Ann Rheum Dis 2017; 76: 1133–1141.

9. Zhang C, Wu Z, Li JW, Zhao H, Wang GQ. The cytokine release syndrome (CRS) of severe COVID-19 and Interleukin-6 receptor (IL-6R) antagonist Tocilizumab may be the key to reduce the mortality. Int J Antimicrob Agents 2020: 105954. https://doi.org/10.1016/j.ijantimicag.2020.105954

10. Messina F, Piaserico S. SARS-CoV-2 infection in a psoriatic patient treated with IL-23 inhibitor. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16468. [Epub ahead of print].

**Personal protective equipment induced facial dermatoses in healthcare workers managing Coronavirus disease 2019**

*Editor,*

During the coronavirus disease 2019 (COVID-19) pandemic, frontline healthcare workers (HCW) are working tirelessly for long hours to provide patient care. Although COVID is not dermatotropic, prolonged contact with personal protective equipment (PPE, i.e. goggles, face-shield/visor, N 95 respirator, double-layered gloves, coverall/gowns, head cover and shoe cover) may cause various dermatoses. Several dermatoses have been reported due to PPE, such as pressure injury, contact dermatitis, pressure urticaria and exacerbation of pre-existing skin diseases, including seborrhoeic dermatitis and acne. We report a preliminary data of HCW who experienced facial dermatoses due to the use of PPE.

From 24 March 2020 to 16 April 2020, we came across with 43 patients comprising physicians, nurses and paramedical staff who involved (directly/indirectly) in managing patients of COVID-19. We used telemedicine to consult these patients. Their history, clinical findings including onset, duration, location, clinical features and other associated symptoms of dermatoses and type of PPE used were recorded. However, patch could not be performed. Final diagnosis was based on history, clinical findings and pattern of dermatoses and symptoms.

The most commonly noted dermatoses were irritant contact dermatitis (ICD; 39.5%) followed by friction dermatitis (25.5%). Goggles were the most common culprit agent among all PPE causing any one of the dermatoses (51.92%), followed by N95...
masks (30.77%) and face shields (17.31%). Nasal bridge (63%) was the commonest anatomical site affected due to dermatoses followed by cheeks and chin (26%). However, there was a considerable overlap of different dermatoses with affliction of multiple sites. The most common symptom experienced by patients was pruritus (67.44%), while erythema (53.49%) was the most common sign observed. Interestingly, we observed two distinct dermatoses, i.e. whole face erythema (suffusion; 21%) attributed to doffing after a long shift and lip lick dermatitis due to constant licking of lips, because of feeling of intense thirst due to restricted fluid intake after donning PPE. The duration of wearing the goggles and mask, excessive sweating and ill-fitting masks, all were associated with increased sensation of irritation. Most of these dermatoses responded well to topical moisturizer, calamine lotion and oral antihistamines. Overall, 21% patients suffered from work absenteeism due to one of the dermatoses (Table 1).

Personal protective equipment-induced dermatoses occur mainly due to the occlusion and hyper-hydration effect of PPE and friction leading breach in the epidermal integrity. Recently, in China, authors noted a very high prevalence, i.e. 97% of skin damages in first-line HCW fighting COVID-19. Yin Z in his study found N-95 mask-induced pressure sore on the nasal bridge in HCW managing COVID-19 patients. Skin barrier may create a portal of entry for COVID-19, as angiotensin-converting enzyme 2, the cell receptor for Severe acute respiratory distress-related Coronavirus-2 (SARS-CoV-2), is abundantly present in blood vessels of the skin and the basal layer of the epidermis. As cases of COVID-19 are on rise with exponential

### Table 1 Clinical features and other data of health care workers suffered from dermatoses

| Variables | Number (n) | Percentage (%) |
|-----------|------------|----------------|
| Number of patients | 43 | – |
| Mean age | 32.78 ± 14.51 | – |
| Sex (Male: Female) | 1.39 | – |
| Average duration PPE worn per day (hours): | 8.76 ± 2.31 | – |
| Average time after which rotation/doffing done (hours): | 4.08 ± 1.01 | – |
| Healthcare role: | | |
| i. Doctors | 31 | 72.09 |
| ii. Nurses | 9 | 20.93 |
| iii. Miscellaneous like ward assistants/cleaners/transport teams | 3 | 6.98 |
| Type of dermatoses: | | |
| i. Irritant contact dermatitis | 17 | 39.53 |
| ii. Allergic dermatitis | 03 | 6.98 |
| iii. Pressure/friction marks/rhagades | 11 | 25.58 |
| iv. Sweat dermatitis | 07 | 16.28 |
| v. Facial acne | 05 | 11.63 |
| vi. Lip lick dermatitis | 04 | 09.30 |
| Site: | | |
| i. Forehead | 09 | 20.93 |
| ii. Eyelids/canthus (goggle dermatitis) | 12 | 27.91 |
| iii. Nasal bridge (goggle and mask dermatitis/pressure dermatosis) | 27 | 62.79 |
| iv. Temple (Visor/mask straps) | 09 | 20.93 |
| v. Medial concha of ear (N95 respirator straps) | 07 | 16.28 |
| vi. Cheeks and chin | 11 | 25.58 |
| vii. Lips/angle of mouth | 04 | 09.30 |
| Symptoms: | | |
| i. Itching | 29 | 67.44 |
| ii. Rash/redness | 21 | 48.84 |
| iii. Burning | 11 | 25.58 |
| iv. Smarting | 08 | 18.60 |
| v. Skin tightness/dryness | 16 | 37.21 |
| Signs: | | |
| i. Erythema | 23 | 53.49 |
| ii. Vesicles | 09 | 20.93 |
| iii. Scaling | 19 | 44.19 |
| iv. Urticaria | 02 | 04.65 |
| v. Papules | 07 | 16.28 |
| vi. Pustules | 04 | 09.30 |
| vii. Pressure indentations and bruising | 20 | 46.51 |
| viii. Excessive lacrimation | 08 | 18.60 |
| ix. Rhinorrhoea | 06 | 13.95 |
| x. Skin discontinuity (Erosions/fissuring/excoriation) | 31 | 72.09 |
| Systemic features: | | |
| i. Nausea | 05 | 11.63 |
| ii. Headaches | 27 | 62.79 |
| iii. Sneezing | 04 | 09.30 |

### Table 1 Continued

| Variables | Number (n) | Percentage (%) |
|-----------|------------|----------------|
| iv. Feeling of intense heat | 37 | 86.05 |
| v. Claustrophobia/agitation with PPE suit | 31 | 72.09 |
| vi. Facial rubeosis/suffusion | 09 | 20.93 |
| Allergic predisposition | 07 | 16.28 |
| Treatment given: | | |
| i. Spontaneous resolution with frequent breaks alone | 08 | 18.60 |
| ii. Topical calamine with aloe vera extracts | 10 | 23.26 |
| iii. Topical tacrolimus | 09 | 20.93 |
| iv. Topical low to mid potency steroids | 04 | 09.30 |
| v. Oat colloidal meal based moisturizer | 24 | 55.81 |
| vi. Petroleum jelly | 04 | 09.30 |
| vii. Systemic antihistamines | 15 | 34.88 |
| Patients requiring rescue steroids | 04 | 09.30 |
| Work absenteeism | 09 | 20.93 |
LETTERS TO THE EDITOR

Effectiveness and safety of dupilumab for the treatment of atopic dermatitis in adult cohort: a real-life Italian tertiary centre experience

Dear Editor,

Atopic dermatitis (AD) is a chronic inflammatory skin disease affecting 7–10% of adults.1 The systemic treatment for moderate-to-severe AD was limited, but a new biologic drug (dupilumab) was recently approved. It is a fully human monoclonal antibody directed against the alpha-subunit of the interleukin-4 receptor, blocking signalling of both Th2 cytokines IL-4 and IL-13. The effectiveness and safety were demonstrated in clinical trials,2–4 but these studies do not reflect conditions in daily practice.

The aim of this study was to analyse the activity of dupilumab in a real-world setting. A total of 128 adult patients were enrolled prospectively between January and September 2019, with moderate-to-severe AD [Eczea Area and Severity Index (EASI) ≥24, or less, but with involvement of sensitive areas], collected from the Dermatology Clinic of the University of Turin. All patients received dupilumab at standard dose, due to inefficiency, side-effects or contraindication of cyclosporine.

This study was approved by the local ethical committee of the Turin University Hospital (No.CS2/1359). Clinical documentation was collected at baseline and every 16 weeks by validated scores5: EASI, Scoring Atopic Dermatitis (SCORAD), Patient Oriented Eczema Measure (POEM) and Dermatology Life Quality Index (DLQI). Itch and sleep disorders were evaluated on a numerical rating scale (itch-NRS and sleep-NRS), as peak value during the previous 24 h. Furthermore, for the first month, the peak of itch-NRS was compared daily by the patients2 to evaluate the weekly median reduction of the values. In addition, during follow-up, blood chemical tests and adverse events (AEs) were collected.

The baseline characteristics are reported in Table 1. Males, at baseline, reported a significantly higher mean EASI (M : F = 29.2 : 24.5-P = 0.01), total IgE mean levels (M : F = 3958 : 1977-P = 0.007) and LDH mean value (M : F = 372 : 271-P = 0.02), while no difference in itch-NRS, sleep-NRS or eosinophil count was detected. However, females reported higher mean POEM (M : F = 19.4 : 21.7-P = 0.03). No patients were previously included in clinical trials and all were treated with conventional treatment (95% cyclosporine).

References

1 Darlenski R, Tsankov N. Covid-19 pandemic and the skin - What should dermatologists know? Clin Dermatol 2020. https://doi.org/10.1016/j.clindermatol.2020.03.012. [published online ahead of print, 2020 Apr 18].

2 Gheissari M, Araghi F, Moravej H, Tabary M, Dadkhahfar S. Skin reactions to non-glove personal protective equipment: an emerging issue in the COVID-19 Pandemic [published online ahead of print, 2020 Apr 18]. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16492

3 Lan J, Song Z, Miao X et al. Skin damage among healthcare workers managing coronavirus disease-2019. J Am Acad Dermatol 2020; 82: 1215–1216.

4 Yin Z. Covid-19: Countermeasure for N95 mask-induced pressure sore [published online ahead of print, 2020 Apr 18]. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16490

5 Hamming I, Timens W, Bulthuis ML, Lely AT, Navis G, van Goor H. Tissue distribution of ACE2 protein, the functional receptor for SARS coronavirus. A first step in understanding SARS pathogenesis. J Pathol 2004; 203: 631–637.

6 https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/CO129_Preventing-skin-damage-under-PPE_9-April.pdf (last accessed: 17 April 2020).

7 https://www.badd.org.uk/shared/get-file.aspx?itemtype=document&id=6675 (last accessed: 17 April 2020).

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LETTERS TO THE EDITOR

Phase, we fear that the dermatoses-induced skin breach and irritation, and frequent touching of face due to latter, may increase the exposure and entry of SARS-CoV-2 infection in the health care workers.

Air-conditioning, proper fitting masks, use of better material (latex straps to be avoided) in the goggles and frequent rotation and regular breaks with removal of the mask and wiping of skin to remove sweat, may help in alleviation of dermatoses in HCW. Adequate hydration is useful to avoid dehydration-induced dermatoses and dry skin.6 Moisturizers or emollients are needed to restore the integrity of skin barrier and should be applied at least 30 min before wearing mask, to prevent the damage to mask. Staff is advised not to smoke if they have applied emollient containing white soft paraffin, as it is flammable.6 Low potency topical steroid or tacrolimus is required in some cases if above measures fail.7

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References

1 Darlenski R, Tsankov N. Covid-19 pandemic and the skin - What should dermatologists know? Clin Dermatol 2020. https://doi.org/10.1016/j.clindermatol.2020.03.012. [published online ahead of print, 2020 Apr 18].

2 Gheissari M, Araghi F, Moravej H, Tabary M, Dadkhahfar S. Skin reactions to non-glove personal protective equipment: an emerging issue in the COVID-19 Pandemic [published online ahead of print, 2020 Apr 18]. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16492

3 Lan J, Song Z, Miao X et al. Skin damage among healthcare workers managing coronavirus disease-2019. J Am Acad Dermatol 2020; 82: 1215–1216.

4 Yin Z. Covid-19: Countermeasure for N95 mask-induced pressure sore [published online ahead of print, 2020 Apr 18]. J Eur Acad Dermatol Venereol 2020. https://doi.org/10.1111/jdv.16490

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6 https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/04/CO129_Preventing-skin-damage-under-PPE_9-April.pdf (last accessed: 17 April 2020).

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