

LETTER

Increased flare of acne caused by long-time mask wearing during COVID-19 pandemic among general population

Dear Editor,

Wearing a mask is encouraged for preventing dispersal of droplets during talking, sneezing and coughing. Therefore, it is thought to reduce the risk of environmental contamination by SARS-CoV-2 (COVID-19) based on the precautionary principles. However, long-time mask wearing could increase the flare of acne due to higher temperature and humidity on the surface of facial skin caused by expired air and the perspiration.^{1,2} We herein reported five patients with acne initial attack among general population due to long-time mask wearing.

From 15th of April to 4th of May in 2020, we diagnosed two dozens of patients with the flare of acne. All the patients were not involved in any health care-associated occupations. Most of them had acne relapse or obvious exacerbation; however, five patients presented initial attack of acne (Table 1). Five patients were all diagnosed with adult acne and two patients were less than 25 years old. The severity of acne ranged from mild to moderate. All five patients admitted wearing mask for more than 4 hours per day over 2 month. However, there was no significant correlation between acne severity and total duration of wearing masks even when correlation between skin lesion numbers and mask-wearing time was analyzed by person test

analysis using the data of 24 patients ($P > .05$, data not shown). The most reported symptoms were itching sensation and excessive seborrhea. The most common signs were comedones, papules on cheek and nose, instead of nodules or cysts on forehead, submaxill and neck (Figure 1). Some advice about skin care were given and all five patients had good response to adapalene gel or AHA peeling.

Higher temperature has a close correlation with the flare of acne, which can be explained by the effect of higher temperature on the sebum excretion rate. The sebum excretion rate varies directly when local temperature changes, and sebum excretion increases by 10% for each 1°C rise. Furthermore, squalene could become significantly more in surface lipid when temperature increases.³

The ambient high humidity precipitates acne is mainly due to poral occlusive effect of skin hydration and irritation to the upper parts of pilosebaceous duct. In addition, sweat and increased humidity might cause swelling of epidermal keratinocytes, thus affecting the keratinocytes of the pilosebaceous follicle and causing acute obstruction and acne aggravation.⁴ Moreover, changes in both surface sebum composition and skin hydration could contribute to disruption of skin barrier, leading to bacterial microflora imbalance.

TABLE 1 Demographic and clinical profile of five patients with initial attack of acne after long-time mask wearing

No.	Age/gender	Time of acne duration	Types of acne	Symptoms	Signs	Time of mask wearing	Number of skin lesions	Treatment
AK3868574	36/male	1 mo	Adult acne	Excess seborrhea and itch	Papules on cheek and nose	9-10 h per day for 3 mo	3	0.1% adapalene gel
AK9447772	25/female	4 mo	Adult acne	Itch	Comedones, papules on cheek	7-8 h per day for 4.5 mo	39	0.1% adapalene gel, 20% peeling with alpha hydroxy acids
AK5040049	26/female	2 mo	Adult acne	Itch	Comedones, papules on cheek	8-9 h per day for 3 mo	19	0.1% adapalene gel
AK4177129	22/male	1 mo	Adult acne	Itch	Comedones, papules on cheek	4 h per day for 3 mo	34	0.1% adapalene gel, 20% peeling with alpha hydroxy acids
AK8603869	21/female	1 mo	Adult acne	N	Comedones, papules on cheek	12 h per day for 2 mo	21	0.1% adapalene gel



FIGURE 1 Mask-acne often presents mild to moderate in severity, consisting mainly of comedones or papules on cheek and nose

Long-time mask wearing during COVID-19 pandemic may lead to increased flare of acne, but what should be noticed is that the patients with acne may be tempted to touch their face following removal of mask for itch and annoying pimples, which could increase the risk of COVID-19 transmission through respiratory route.⁵

The surgical mask and N95 mask should be replaced every 4 hours and 3 days, respectively. Washing hands before wearing and after removing the mask is recommended. The patients should control the time of mask wearing and put two layers of gauze inside the mask to reduce the amount of water vapor exhaled from the mouth and the perspiration. The patients with oily skin need to wipe their face with a wet towel containing moisturizing ingredients regularly. It is also suggested to apply cleansing products and emollients containing oil control ingredients. By employing these nonpharmacologic maneuvers, the condition of mask-related acne might be relieved. However, the patients should consult dermatologists for topical or oral medication if the acne lesions sustain or aggravate.

Although wearing mask is extremely important to our fight against COVID-19, general public should be aware of proper and rational mask wearing.

CONFLICT OF INTEREST

The authors declare no potential conflict of interests.

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REFERENCES

1. 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 Dermatitis*. 2006;55(5):291-294.
2. Gheisari M, Araghi F, Moravvej H, Tabary M, Dadkhahfar S. Skin reactions to non-glove personal protective equipment: an emerging issue in the COVID-19 pandemic. *J Eur Acad Dermatol Venereol*. 2020. <https://doi.org/10.1111/jdv.16492>. [Online ahead of print].
3. Narang I, Sardana K, Bajpai R, Garg VK. Seasonal aggravation of acne in summers and the effect of temperature and humidity in a study in a tropical setting. *J Cosmet Dermatol*. 2019;18(4):1098-1104.
4. Sardana K, Sharma RC, Sarkar R. Seasonal variation in acne vulgaris—myth or reality. *J Dermatol*. 2002;29(8):484-488.
5. Gupta MK, Lipner SR. Personal protective equipment recommendations based on COVID-19 route of transmission. *J Am Acad Dermatol*. 2020. <https://doi.org/10.1016/j.jaad.2020.04.068>. [Online ahead of print].