



## “Mask” *Tinea*: An Increasing Infection during COVID-19 Pandemic

Received: 2 November 2021 / Accepted: 11 December 2021 / Published online: 29 December 2021  
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Since the onset of Coronavirus Disease-19 (COVID-19) pandemic, our lifestyle habits have changed dramatically. The use of face masks for many hours per day, necessary to limit the risk of virus transmission, is surely one of them. It has been reported that, because of occlusive effects of masks on the skin, some dermatitis of the face, such as acne, rosacea and seborrheic dermatitis, often worsen. In addition to these diseases, we also observed an increased number of cases of *tinea faciei*, a very rare infection among adults in the metropolitan area of Milan, with only 19 diagnosed cases in the decade 2005–2015. We report seven patients (5 males and 2 females, with an age ranging from 33 to 71 years; mean age: 54 years) with *tinea faciei* involving the area of the face covered by masks, collected in the period from October 2020 to September 2021. All patients used face masks for more than 6 h a day and they wore the same mask for up to ten days (mean usage of the same mask: 6 days). Clinical picture was superimposable in all patients: unilateral, erythematous-squamous lesions, with raised and well-defined borders, involving the area of the face covered by mask (Fig. 1). All patients complained of mild pruritus. After the diagnosis with direct microscopical examinations using 20% potassium hydroxide, fungal identification was performed both with fungal culture on Sabouraud Dextrose Agar

and chloramphenicol (SDA + CAF) and with matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS). The causative agent was *Trichophyton mentagrophytes* in 3 patients, *Trichophyton rubrum* in 3 patients and *Microsporum canis* in one case. In five patients the skin of the feet and toenails were also involved by the same agent found in the lesions of the face (*Trichophyton rubrum* in 3 patients and *Trichophyton mentagrophytes* in 2 patients). In one case the suspected source of infection was the patient's pet (a recently bought dog). In the last patient the possible cause was not found. All cases were successfully treated with a combination of topical antifungals (azoles or allylamines) daily for 4 weeks, and terbinafine 250 mg/day for 2 weeks. Follow-up (1–12 months) was negative in all patients.

Face masks induce an increase of temperature of the epidermis: this increases sweating, with irritant action and worsening of pruritus. Furthermore, breath creates a humid environment. Taken together, these two conditions create the best growth environment for the dermatophytes responsible for *tinea faciei*. It is also possible that face masks induce abnormalities of both local microbiota and permeability of the skin barrier: the latter allows the penetration of fungi. Poor personal hygiene and the use of the same mask for many days can promote the infection. To our



**Fig. 1** Erythematous-squamous lesions, with raised, well-defined borders, involving the area of the face covered by masks: “mask” *tinea faciei*

knowledge, only one report of *tinea faciei* associated with the use of face masks has been published so far;

however, it is possible that this infection will be observed more frequently in the next future, due to the almost worldwide obligation to wear face mask against COVID-19. We suggest a complete mycological investigation to find all possible reservoirs. It is also important to insist on the necessity of a face mask daily change and careful cleaning of face, hands and feet.

**Funding** None.

**Declarations**

**Conflict of interest** We declare that we have no conflicts of interest.

**Publisher’s Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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