Universal masking and allergy

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Universal use of face mask has been an effective measure to control COVID-19 pandemic and has become part of daily life among the public. This effective public health measure is beneficial in lowering the risk of virus transmission while at the same time bringing a number of allergy issues which is increasingly encountered in allergy clinic. Accurate diagnosis of possible mask-induced allergic condition with appropriate advice is important to maintain mask compliance.

Mask-induced itch

It has been reported almost 20% of people who wear mask experienced itch.[1] The problem sounds minor. However, scratching with or without mask removal can reduce protection and may even promote viral transmission. Reported sensitive skin, history of atopy, underlying facial dermatoses such as atopic dermatitis, acne, seborrhoeic dermatitis significantly predisposed users to development of itch. Surgical mask was found to be associated with lower risk of itch as compared to cloth mask. Frequency of itch increased with the duration of face mask use, being significantly more common in people using masks for 5 hours or more. As such, a good control of underlying skin condition is important to reduce possible itch problem. Emollients are recommended as one of the basic options to help alleviate itch. If condition allows, it is advisable to avoid prolonged usage of mask.

Atopic dermatitis

Wearing a mask can result in the worsening of existing skin diseases like facial atopic dermatitis. A survey of atopic dermatitis patients found they commonly experienced various kinds of symptoms including heat sensation, excessive sweating, exacerbation of itch, difficulties to breath, tingling and burning sensations.[2] However, only 16% of the patients reported having their skincare habits changed due to wearing a mask, mainly by applying more frequently an emollient. Interestingly, 53% of the patients reported that wearing a mask protected them from the gaze of others and improved their quality of life.

Allergic contact dermatitis

Allergic contact dermatitis has been reported to be associated with face mask use.[3] Mask-induced contact dermatitis are most commonly evident on the nasal bridge, cheeks and chin. Several common causative allergens have been identified: formaldehyde, which is typically added to natural and synthetic fibers during manufacturing processes; dibromodicyanobutane, which was used as a preservative in detergents and as an adhesive to attach the polyester foam strip to the mask textile; thiuram, which constitutes component in the elastic ear strap of mask; polyurethane residual cross-linkers, which are being frequently used in the production of the sponge strip inside the mask; cocospropylenediamin-guanidinium-diacetate, a preservative used to disinfect medical instruments and apparatus; triglycidyl isocyanurate, which is used as a hardener; and bronopol, which may be contained as trace impurities in nonwoven polypropylene surgical masks. Moreover, handmade fabric masks, most of the time do not have an ingredient label, can contain multiple potential allergens.

A detailed clinical history is important in diagnosing allergic contact dermatitis. Patch test can be performed to make the diagnosis. Testing agents include common allergens such as formaldehyde and formaldehyde releasers, thiuram mix, mercapto mix, fragrance mix I and II and isothiazolinones. If patch test is positive to part of the mask containing rubber, it is also suggested to perform the radio allergo sorbent test and/or skin prick test to latex to exclude a concomitant immunoglobulin E-mediated allergic reaction to latex. If a specific allergen accounting for allergic contact dermatitis is identified, it is recommended to use masks made of other materials. Generally speaking, it is advised to use only certified masks, preferably with a label including information about the ingredients. Mask with multiple colorings, additional fragrance should be avoided.

Contact urticaria

Contact urticaria has been described with surgical mask use. A 7-year-old atopic girl presented with itchy erythematous rash and swelling on the face 30 to 60 minutes after wearing a disposable polypropylene surgical mask.[4] The symptoms and signs resolved completely in 8 to 24 hours. Provocation test on the arm was positive in 30 minutes. Her patch test with Società Italiana di Dermatologia Allergologica Professionale e Ambientale (SIDAPA) baseline series (F.I.R.M.A., Florence, Italy) was negative. Further patch test with fragments of the patient's mask was also negative. These spoke against allergic contact dermatitis. The general causal agents for contact urticaria may be fragrances, preservatives, disinfectants, flavourings and medications, but in this particular case it remained as an unknown component of the surgical mask. This girl was advised to use cotton fabric masks and she tolerated well without any symptom.

Irritant contact dermatitis

Closed and warm environments increased skin's permeability and sensitivity to physical or chemical irritants, leading to chronic irritant contact dermatitis. Such condition may exacerbate especially during warm and humid seasons in Hong Kong. The potential pathophysiological skin changes include impairment of keratinocytes, cutaneous microbiota disorder, release of proinflammatory cytokines, increased transepidermal water loss and pH. A number of preventive measures

are suggested to alleviate irritant contact dermatitis. If condition allows, one should avoid wearing face mask for prolonged period. Environment is preferred to be kept cool and low in humidity. One can apply fragrance-free, non-occlusive emollients before donning and after doffing masks to protect skin as well.

Universal compulsory masking in public is anticipated to be continued for a period of time. The prolonged mask contact may result in increased incidence of allergic skin condition, flare-ups of preexisting dermatoses, and remain a challenge to medical practitioners.

Reference

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