

Review Article

An outlook on hand dermatitis in healthcare workers during COVID-19

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ABSTRACT

Hand dermatitis is a highly prevalent cutaneous manifestation in the occupational setting, particularly among health-care professionals. Repetitive handwashing procedures using alcohol gels and soaps, irritants from PPE kits, and gloves can cause adverse effects on the hand's skin integrity. Various morphological patterns of hand dermatitis have different times of onset. These characteristics make diagnosis a challenging task. During the pandemic, hand dermatitis has increased dramatically among healthcare workers. This condition can be tackled using targeted topical steroids and emollients.

Keywords: Hand dermatitis, COVID-19, Healthcare, Contact dermatitis

INTRODUCTION

Hand dermatitis or hand eczema is a common condition that affects the dorsal and palmar aspects of the hand. It is particularly common in people with a history of atopic dermatitis. It especially affects people working in specific industries such as hairdressing, health care, painting, and mechanical work. Some of the common symptoms of hand dermatitis are itching, dryness, redness, and crusting.

Hand dermatitis is one of the most common cutaneous manifestations that occur among healthcare workers in the occupational setting. During the COVID-19 pandemic, the regular usage of alcohol-based sanitizers and hand gels has increased the prevalence of hand dermatitis among health care workers.^[1,2] Certain irritants from PPE kits and gloves also cause adverse effects on the integrity of the hand's skin.

Contact dermatitis accounts for 70–90% of occupational skin diseases and can adversely affect function and quality of life. This has gone to show that there is a need for increased awareness of hand dermatitis in healthcare workers in the occupational setting. Managing hand dermatitis in healthcare workers has been a primary concern in recent times that must be addressed. While this condition is not contagious, it can affect one's self-esteem.

MATERIAL AND METHODS

Keywords such as contact dermatitis, healthcare workers, hand dermatitis, and COVID-19 were used for the literature search databases such as Google Scholar and PubMed. Articles published in the past 2 years were taken for review. Seventeen papers have been retrieved and analyzed for relevant studies.

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RESULTS

Since the outbreak of coronavirus in 2020, there has been a surge of hand dermatitis cases among healthcare workers. About 97% of these cases have been due to intensified hygiene regimens.^[3] Analyzing the symptoms, we found that 27.4% experience dryness as the first sign of contact dermatitis followed by a change in the texture of the skin.

DISCUSSION

During the pandemic, healthcare workers were asked to follow safety measures such as respiratory medical masks along with PPE gloves, gowns, and eye protection. Furthermore, a strict regimen of hand hygiene was to be followed at all times. This has led to increased damage to the skin due to excessive use of sanitizers and soaps.

The integrity of the epidermal barrier and the innate immune system are endogenous factors that play a key role in the development of hand dermatitis. Some pathogens that affect the skin disrupt the stratum corneum and traverse through the layers where they are sensed by pathogen receptors that ultimately release pro-inflammatory cytokines that inevitably lead to hand dermatitis.

A few pathogens that cause hand dermatitis most commonly are *Staphylococcus aureus* (*S. aureus*) and *Malassezia*. *Malassezia* species are part of the normal flora in the stratum corneum and cause hand dermatitis by sensitization.^[4,5] The etiopathogenesis of hand dermatitis is multifactorial; however, there is a genetic predisposition that is believed to play a key role, although this is not fully understood.

Hand dermatitis can be classified as acute, relapsing, and chronic based on its severity. The acute phase presents with macules, papules, plaques, swelling, crusting, and fissuring [Figure 1]. Multiple relapses of hand dermatitis eventually led to the chronic phase with dryness, scaling, and lichenification [Figure 2].^[6]

Due to the varying times of onset, there are multiple clinical presentations of hand dermatitis, which makes it extremely difficult to reach a conclusive diagnosis.^[6] A couple of patterns include pompholyx, recurrent focal palmar peeling, ring eczema, fingertip eczema, hyperkeratotic eczema, apron eczema, chronic acral dermatitis, and gut eczema.^[7,8]

The previous studies have shown that females are at a higher risk of contracting hand dermatitis. Even in people who had no prior cutaneous manifestations, unusual cases of hand dermatitis have occurred.^[9-13]

An increased incidence has been most commonly seen in Europe (28.6%–77.8%), followed by Asia (7.1%–35.7%), North America (0%–35.5%), and others (0–13.3%).^[14]

This disparity of reports of hand dermatitis among different continents could stem from a lack of important knowledge and practice gaps in the manifestations and management of hand dermatitis. The heterogeneous etiologies of hand dermatitis and cultural differences and differences in the diagnostic workup could also be a potential reason for this.

During the COVID-19 pandemic, the frontline workers had to undergo the process of repetitive hand hygiene methods and showering to disinfect themselves after spending a long time at the health-care facility.

The pH of the skin is normally acidic and the usage of alkaline-based sanitizers and most soaps which have components such as isopropyl alcohol and sodium lauryl sulfate strip the integrity of the epidermis and damages the stratum corneum.^[15] Another factor that affects the epidermal barrier is various environmental factors – such as the winter season, hand washing, and glove use [Table 1].^[16]

At the peak of the pandemic, frontline workers preferred using double or triple gloves as a COVID-19 prevention strategy.^[17] This practice has led to an increased incidence of pressure ulcers, and pressure-induced dermatitis due to powdered, non-powdered, and latex gloves. On comparing the occurrence of hand dermatitis among different health-care practitioners, female nurses had the highest incidence of contact hand dermatitis followed by practitioners in the critical care unit during the COVID-19 pandemic.

Although there is only symptomatic relief, preventive strategies such as daily use of moisturizers exist. A simple modification in the handwashing practice includes the use of lukewarm water. Topical steroids are known to reduce inflammation. The use of potent topical steroids on the dorsal aspect of the hands and ultrapotent steroids on the palmar aspect of the hands is known to help. A topical steroid with a prominent ointment base is considered to be

Table 1: Environmental factors affecting the skin.

Skin exposures	Climate	Air Pollutants	Early life exposure to dirt and pathogens
1. Irritants	1. Temperature	1. Outdoor Pollutants	1. Farm and rural living
2. Pruritogens	2. Humidity	2. Indoor Pollutants	2. Manure and microbial exposure at home
	3. Ultraviolet radiation		3. Chickenpox infection
	4. Precipitation		4. Respiratory syncytial virus



Figure 1: Hand dermatitis.^[6]

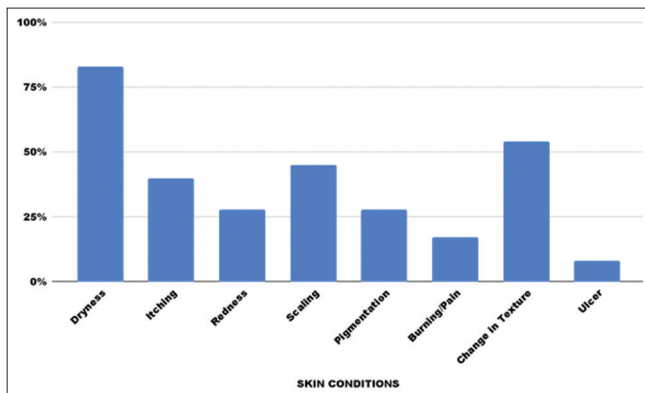


Figure 2: Frequency of signs and symptoms seen in hand dermatitis.^[7,8]

the best treatment for people who suffer from chronic hand dermatitis.

Analysis of healthcare workers showed that the workers who used moisturizers and emollients daily were at a far reduced risk of acquiring hand dermatitis. Many hospitals have started implementing the use of latex-free gloves which have shown to cause fewer cases of hand dermatitis.

CONCLUSION

Hand dermatitis can present as an acute or chronic condition that affects the dorsal and palmar aspects of the hand. There are various morphological patterns of hand dermatitis. Hence, there has been a rising need for awareness regarding the increasing cases of contact dermatitis, especially in the health-care setting. Many factors could be potential risks for causing hand dermatitis, such as the environment and the use of certain equipment in the occupational setting. Proper prevention strategies are required as it is vital to protect health care workers against any occupational hazards. Multiple

treatment options exist. Topical steroids are the most popular treatment. While a few tend to lean toward home remedies, in the chronic stage, one must visit a dermatologist and seek proper treatment.

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Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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