


Fluctuating Palmar Erythema in a Toddler during COVID-19 Pandemic: Do You Know the Offender?

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ABSTRACT

Palmar erythema in children can be due to various reasons, such as chronic liver disease, rheumatological disorders, medications, irritant contact dermatitis and atopic dermatitis. Recently, there are few reports about contact dermatitis caused by frequent, daily use of hand sanitizers during this COVID-19 pandemic. A 3-year-old toddler brought with the concern of waxing-waning bilateral palmar erythema for the past 2 weeks. The parents revealed that the child liked the bright color of a recently bought hand sanitizer bottle so much he used to wash his hands every 20–30 min throughout the day. The atypical presentation of contact dermatitis might be because the child was using the sanitizer more frequently during the daytime. The dermatitis resolved with stopping excessive use of the hand sanitizer by the toddler. Clinicians should be aware of contact dermatitis during these pandemic times. Instead of investigating them extensively, careful history taking and merely advising them to judiciously utilize the sanitizer can lead to complete reversal of symptoms.

KEYWORDS: COVID-19, sanitizer, eczema, irritant contact dermatitis

CASE REPORT

A 3-year-old boy presented with bilateral palmar erythema for 2 weeks before presentation, not associated with itching, skin excoriation, dry skin, pain, any other color change, exacerbation by exposure to cold or hot temperature. There was no other exacerbating or relieving factors apart from diurnal fluctuation. The symptoms used to worsen as the day progress, with diminution of symptoms toward the morning. There were no other systemic symptoms or similar illness in family members. Physical examination was otherwise unremarkable except bilateral palmar

erythema ([Fig. 1](#)). Hematological and basic metabolic parameters, liver and renal function tests, serum electrolytes, thyroid hormone levels, fasting blood sugar, glycosylated hemoglobin and work up for systemic autoimmune etiology, including rheumatoid factor was within normal limits. The boy was referred to our center for further evaluation. On inquiring further the parents revealed, that the child like the bright color of a recently bought hand sanitizer bottle so much that used to wash his hands every 20–30 min throughout the day. The symptom onset of the palmar erythema was temporally correlated with the excessive use of this



FIG. 1. Hand photographs of the child showing palmar erythema (A) in evening which get subsided by morning (B).

new alcohol-based hand sanitizer. With a probable diagnosis of irritant contact dermatitis (ICD) of bilateral hands, the parents were advised to restrict the use of hand sanitizer only when necessary and limit it to a few times a day. Within a week, there was a dramatic improvement, with almost complete resolution of symptoms, without advising any other medication, thereby confirming the diagnosis of ICD.

Palmar erythema in children can be due to various reasons, such as chronic liver diseases with cirrhosis, rheumatological disorders and connective tissue diseases with Raynaud phenomenon, thyrotoxicosis, diabetes, certain heavy metal poisoning, Kawasaki disease, obstructive pulmonary diseases, few medications like salbutamol and topiramate, apart from allergic or ICD and atopic dermatitis [1]. Recently, there are few reports in print media and even in the published literature about contact dermatitis caused by frequent, daily use of hand sanitizers during this COVID-19 pandemic. The atypical presentation of contact dermatitis might be because the child was using the sanitizer more frequently during the daytime. Furthermore, the absence of itching and other associated symptoms led to incorrect diagnosis by previous clinical practitioners.

As no definitive medication or effective vaccine for use by the general public is available till now and WHO recommend regular and diligent hand hygiene with sanitizers as a measure to curb the spread of COVID 19 pandemic by fomites from contaminated surfaces [2–6]. However, overzealous hand hygiene with sanitizer leads to prolonged exposure to these chemical or physical agents. It may result in several pathophysiologic changes,

such as impairment of keratinocytes, epidermal barrier disruption, the subsequent release of pro-inflammatory cytokines and delayed-type hypersensitivity reactions, due to activation of the skin immune system [7].

These are the pathophysiological mechanisms behind the adverse dermatologic effects like excessive skin dryness, ICD (more common, 80% of cases) or allergic contact dermatitis and they are more likely to occur in patients with a history of atopic dermatitis previously [8]. American Contact Dermatitis Society recommends the use of moisturizers containing hand sanitizers. ICD risk increases relative to the duration, concentration and intensity of contact with the eliciting substance. Alcohol-based hand sanitizers are relatively safer than chlorhexidine, chloroxylenol, triclosan or detergent-based hand sanitizers, because of lesser lipid-dissolving effects [9]. Although the occurrence of such dermatological adverse events should not encourage people to deviate from strict hand hygiene rules, applying a moisturizer immediately following the use of hand sanitizer or using a moisturizer containing sanitizer may prevent the potential occurrence of ICD [10]. Parents must check the ingredients of sanitizer products for their children to prevent hand dermatitis. Clinicians also need to be aware of milder and atypical forms of contact dermatitis during these pandemic times and instead of investigating them extensively, careful history taking and merely advising to utilize the sanitizer judiciously can lead to complete reversal of symptoms.

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