PREVENTION AND TREATMENT OF CUTANEOUS LESIONS AMONG HEALTHCARE WORKERS IN THE CONTEXT OF CORONAVIRUS PANDEMIC 2020

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Summary

The coronavirus epidemic was a time of reset in all areas and especially in the medical field. In attempt to limit the spread of the virus, the medical staff used disinfectants with irritant but also allergic potential that, used for a long time, lead to the removal of the protective lipid layer of the skin. Thus, the medical staff is exposed to the appearance of acute allergic or irritative dermatitis, the aggravation of some already existing chronic dermatitis (eg: latex contact dermatitis) or superinfection with various other germs.

It is important to note that these adverse reactions to disinfectants may take mild, localized or severe forms with significant spread and urticarial phenomena. Considering the lesions located at the level of contact areas with bactericides or due to the protective materials used (occlusive masks, glasses) with the impossibility of carrying out subsequent medical activity, it becomes practically mandatory to raise awareness of medical staff and provide means of protection and possible treatment for these affections.

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The coronavirus epidemic was a time of reset in all areas and especially in the medical field. In attempt to limit the spread of the virus, the medical staff used disinfectants with irritant but also allergic potential that, used for a long time, lead to the removal of the protective lipid layer of the skin. Thus, the medical staff is exposed to the appearance of acute allergic or irritative dermatitis, the aggravation of some already existing chronic dermatitis (eg: latex contact dermatitis) or superinfection with various other germs.

It is important to note that these adverse reactions to disinfectants can take mild, localized or severe forms, with dissemination and significant urticarial phenomena. Given the lesions located in the areas of contact with bactericides or due to the protective materials used (occlusive masks, goggles) with the impossibility of further medical activity, it becomes practically mandatory to raise awareness of medical staff and provide means of protection and possible treatment for these diseases with professional potential.

The skin represents a natural barrier having a triple function: physical (through the cellular layers and the protective lipid layer provided by the attached glands etc.), chemical (through the production of substances with an antibacterial role) and immunological. With the destruction of this natural barrier as well as of the skin microbiome, a solution of continuity is produced with the appearance of lesions that maintain inflammatory and allergic phenomena as well as the penetration of the pathogenic flora.

The stratum corneum (the outer layer of the skin) is destroyed primarily by dehydration, but

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also by the surfactants in soap that bind to protective lipids (negatively charged) [1,2]. The pH of the skin is normally acidic while most soaps have a pH above 7, which means an alkaline pH, thus altering the skin integrity [2].

It is somewhat a paradox that the use of highly antiseptic substances can secondarily cause infections with other germs, considering that we do not live in a sterile environment and many other pathogenic microorganisms can survive longer in the environment.

During exposure to disinfectants, in addition to the skin, the olfactory and ophthalmic mucosae as well as the bronchial mucosa can be affected by the released vapors and can even cause asthmatiform seizures.

The main manifestations of dermatitis, whether it is allergic dermatitis with localized or disseminated manifestations or irritative dermatitis to disinfectants, they consist in the appearance of the same erythematous-papular and scaly lesions, in some places cracked, accompanied by itching, dryness, sensations of burning and pain. Bladder lesions can also occur and, over time, even lichenification lesions through intense scratching. In a small number of cases, these lesions can become generalized.

Before wearing the suit, it is recommended to remove all jewelry and accessories to prevent the appearance of places that do not allow proper disinfection; the nails will be cut as short as possible and it is also recommended to remove the make-up (possible false eyelashes, toupees, hair extensions etc.).

The main measures for hand skin care after proper disinfection are:

- application of moisturizing, emollient creams after disinfection whenever a break is possible
- after long-term use of gloves, use creams / ointments containing substances with repairing potential such as: vitamin E, A, hyaluronic acid, urea etc.

It has been found that wearing gloves increases the risk of allergic reactions to latex in proportion to the number of gloves worn [1], sometimes even rows of gloves are used during medical maneuvers.

- wearing gloves for a long time can increase the risk of macerations and cracks due to persistent humidity, especially in interdigital spaces; at this time it is recommended to use compresses with 1-2% boric acid and soft zinc paste;
- at the appearance of contact dermatitis accompanied by intense itching, it is recommended to use dermocorticoids for short periods of time and alternate with emollients; wearing cotton gloves as a first coating is especially recommended for staff with a known allergic history; if the skin lesions worsen or spread to the body, a dermatological consultation is recommended; depending on the severity of the cases, one can opt for the oral administration of antihistamines or even iv or oral corticosteroids for short periods.

Skin injuries caused by the use of masks and safety goggles (they occur mainly due to the suction process necessary to seal the equipment).

- consist of local traumatic pressure injuries (rash, cracks, erosions), contact dermatitis, urticaria, aggravation of pre-existing skin lesions, acneiform lesions. According to a report from Singapore during the 2003 SARS epidemic, side effects have been reported consisting of acne (35.5%), facial itching (59.6%) and facial rash (35.8%) after wearing N95 masks (Bhoyrul et al., 2019; Foo, Goon, Leow & Goh, 2006). It is considered that the suction phenomenon due to the wearing of the occlusive masks leads to the rupture of the capillaries at the level of the perioral area. It is important to note that the use of occlusive masks, goggles and visors simultaneously for at least 45 minutes leads to the appearance of these lesions with a remanence of 2-3 hours. It is also worth remembering that after undressing the suit and other protective materials, the medical staff is obliged to use the shower all over, including washing the hair. Repeating these procedures 2-3 times a day can speed up the process of destroying the skin barrier and, therefore, it is recommended to use shower gels and shampoos with emollient, moisturizing potential.
- preventive measures: use of hydrocolloidal patches or gels at the pressure

areas of the mask and/or glasses; use of emollient gels before wearing facial protection equipment.

Treatment:
- for minor injuries it is recommended to apply compresses with physiologic saline or cold water for 20 minutes after which the application of emollient creams;
- in the conditions of vesicular or erosive lesions, it is recommended to apply solutions / compresses with physiological or antiseptic serum (ex: boric acid 1-2%) and to prevent bacterial superinfection by applying antibacterial ointments.
- in case of pressure urticaria, the administration of second generation antihistamines is recommended;
- for facial contact dermatitis caused by prolonged use of masks, it is recommended: applying perioral emollient creams, avoiding washing the face with hot water or alcohol-based solutions; application of medium potency dermatocorticoids and in case of pruritus, administration of antihistamines.
- in case of facial dry skin, it is recommended to use intensely moisturizing creams before and after wearing masks as well as thermal water sprays.
- in case of aggravation of pre-existing dermatoses (acne is aggravated by obstruction of pilosebaceous follicles and maintenance of local humidity, seborrheic dermatitis, rosacea), previously used topical treatments can be applied under dermatological supervision.

Eye damage is due to the contact with vapors of antiseptic substances (especially chloramine and alcohol) which cause dryness of the ophthalmic mucosa accompanied by itching and foreign body sensation.

The nasal mucosa is one of the main gateways and its damage is also possible in the context of the use of substances that destroy the barrier of the nasal mucosa. Washing the nasal vestibule with saline solution or water contributes to maintaining the functionality of the mucosal barrier.

It is also important to note that during exposure to UV lamps avoid the administration of NSAIDs or other photosensitizing drugs (take into consideration that UV rays do not penetrate the folds of clothing).

Fighting superinfection: skin lesions can become superinfected with other microbes such as Staphylococcus aureus or fungal infections, most often Candida albicans. In these cases, antibacterial or antifungal ointments are associated with specific therapy.

The AAD's recommendation regarding the prophylaxis of skin lesions in medical staff is: "rub, don't scrub", which translates to "rub, but do not exaggerate" [2]. Also, in a 2018 study, it is recommended to wipe wet hands with paper towel and not with hand dryers. In this way, excessive drying is avoided, but also the spread of viral particles in the atmosphere.

It is now known that the highest risk of contamination is represented by undressing at the exit from the "red zone", when all stages must be completed with patience and assistance. Most of the time, the costumes behave like an "own sauna" and the shower becomes mandatory. Therefore, beyond the risk of infection, the long-term maintenance of the health of medical staff in pandemic conditions must also be taken into account.

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Conflict of interest
NONE DECLARED

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