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ПРОФЕССИОНАЛЬНОЕ ВОЗДЕЙСТВИЕ НА ЭКЗЕМУ РУК
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OCCUPATIONAL EXPOSURE ON HAND ECZEMA
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Резюме. Экзема рук – распространенное профессиональное заболевание кожи, характеризующееся сухостью, покраснением и воспалением, в основном вызываемое раздражителями, аллергенами и воздействием воды, особенно на работах, где много воды. Профилактика с помощью защитных мер, ухода за кожей и обучения имеет важное значение, а лечение включает местные кортикостероиды, ингибиторы кальциневрина и новые методы лечения, такие как ингибиторы JAK. Устранение экологических и профессиональных рисков может снизить заболеваемость, тяжесть и улучшить качество жизни пострадавших людей.

Ключевые слова: экзема рук, Профессиональное воздействие, Нарушение кожного барьера, Раздражители и аллергены, Профилактические и терапевтические стратегии.

Resume. Hand eczema is a common occupational skin condition characterized by dryness, redness, and inflammation, primarily caused by irritants, allergens, and water exposure, especially in water-intensive jobs. Prevention through protective measures, skin care, and education is important, and treatment includes topical corticosteroids, calcineurin inhibitors, and newer therapies such as JAK inhibitors. Eliminating environmental and occupational hazards can reduce incidence, severity, and improve quality of life for affected individuals.

Keywords: hand eczema, occupational exposure, skin barrier disruption, irritants and allergens, preventive and therapeutic strategies.

Actuality. This report discusses the occupational impact on hand eczema. Manifested with dry, itchy skin associated with swelling and redness, hand eczema is most commonly seen on the palms of the hand, although it can also affect other areas of the hand. With an epidemiological incidence of 2% to 10% in adults, its etiology includes both genetic and environmental factors. Work-related exposures are among the most widespread causes, often exacerbating the condition. The impairment of the epidermal barrier function plays a central role in the disease's pathogenesis, supported by exogenous factors such as skin irritants—including soaps, detergents, solvents, and chemicals—and endogenous factors like atopic predisposition. Individuals with a history of atopic dermatitis are at a higher risk of developing hand eczema; however, occupational exposures significantly contribute to its onset and severity. Workers who frequently use gloves, perform handwashing multiple times daily, or handle various skin irritants are particularly vulnerable. Professions such as healthcare workers, hairdressers, florists, cleaners, and food handlers are commonly affected, highlighting the importance of preventive measures. Proper skin care routines, protective

equipment, and education about minimizing exposure to irritants are crucial in managing and reducing the occupational burden of hand eczema. Addressing these factors can improve quality of life for affected individuals and reduce work absenteeism associated with the condition.

Objectives: to evaluate how different occupations affect hand eczema.

Materials and methods. More than 20 different articles published on various online platforms including PubMed and Google scholar.

Results and their discussion. The increased frequency of water exposure, influenced by factors such as the pH level, mineral content, and elevated temperatures, contributes significantly to the compromise of the skin's outermost layer, the stratum corneum. This layer acts as a primary barrier against environmental irritants and allergens. When it becomes weakened or shrinks, it predisposes individuals to conditions like hand eczema, characterized by dryness, redness, cracking, and inflammation.

One specific subtype of hand eczema, allergic contact dermatitis, is often triggered by exposure to chemical agents present in gloves and glove powders. These chemicals are used in the processing of synthetic, nitrile, and latex gloves to improve their handling and durability. Unfortunately, these substances can act as allergens or irritants, leading to allergic reactions in sensitized individuals.

Supporting this, research from Odense University has highlighted the prevalence of hand eczema among healthcare professionals. In a study involving 242 surgeons and nurses, 47% reported developing hand eczema due to frequent glove use and hand hygiene practices. This high incidence underscores the occupational risk posed by constant exposure to irritants and allergens in healthcare settings.

Furthermore, statistical data indicates that women are at a higher risk of developing hand eczema compared to men. This increased susceptibility can be attributed to a combination of factors, including household activities such as dishwashing, cleaning, and laundry, which involve repeated water exposure. Additionally, professional activities like nursing, hairdressing, and domestic chores often require prolonged contact with water and detergents, further weakening the skin barrier. Biological differences, such as variations in skin thickness and hormonal influences, may also play a role in this heightened risk among women.

Modern approaches of treatment : JAK inhibitors (Janus Kinase) are a modern treatment method prescribed for inflammatory conditions like rheumatoid arthritis and psoriatic arthritis. In 2022 JAK inhibitors approved by FDA for eczema treatment.

Cytokines use JAK signaling pathway to trigger inflammation, so JAK inhibitors inhibit the inflammatory process.

3 JAK inhibitors approved so far by FDA,

- i. Abrocitinib tablet is for adults with moderate to serious eczema
- ii. Ruxolitinib is a topical short-term medicine.
- iii. Upadacitinib for adults and children over age 12.

It also has some severe side effects like lowering your immunity, raises chances of getting lymphomas, heart attacks, stroke, cardiac death.

Researchers are studying other JAK inhibitors, and they are still under investigation.

Conclusion. Overall, both environmental and occupational factors contribute to the development of hand eczema, with certain populations, especially women engaged in water-intensive activities, being more vulnerable. Preventive strategies, including proper skin care, use of protective barriers, and minimizing contact with known irritants, are essential to reduce the incidence and severity of this condition.

The mainstay of managing hand eczema revolves around implementing effective preventative strategies, particularly for exogenous types where external factors such as irritants and allergens play a significant role. These measures include the use of protective gloves, moisturizers, and avoidance of harsh chemicals to reduce skin barrier disruption. When these preventive steps are insufficient to control the condition, topical corticosteroids remain the most commonly employed therapeutic agents. These medications possess anti-inflammatory, antipruritic, and moisturizing properties that help alleviate symptoms and reduce inflammation. In addition to corticosteroids, topical calcineurin inhibitors like Tacrolimus and Pimecrolimus serve as valuable alternatives, especially in sensitive areas or for long-term management. These agents work by inhibiting the transcription of inflammatory cytokines released from T cells and mast cells, achieved through blocking calcineurin phosphatase activity, ultimately decreasing inflammatory responses. For patients with recurrent or severe atopic hand dermatitis, systemic immunosuppressants such as cyclosporine may be considered, although their use is limited to specific cases due to potential side effects. Long-term use of cyclosporine necessitates concurrent UV protection because of the increased risk of skin cancer associated with immunosuppression. Recently, JAK inhibitors have emerged as a promising modern alternative owing to their excellent bioavailability and tolerability, offering targeted modulation of cytokine signaling pathways involved in eczema pathogenesis. Furthermore, adjunctive therapies such as superficial x-ray therapy, when combined with topical treatments, have demonstrated significantly improved therapeutic outcomes, reflecting an integrative approach in contemporary dermatologic practice. It is also noteworthy that epidemiological data suggest a positive correlation between the frequency of exposure to wet work and the incidence of hand eczema, establishing a proportional relationship that underscores the importance of occupational health measures in preventing this condition.

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