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Work-related hand eczema

KLINISK OVERSIKT

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Hand eczema is the commonest work-related skin disease and most often affects those engaged in 'wet work'. Collaboration between general practitioners, dermatologists and occupational physicians is often necessary to determine whether occupational exposure is the cause of hand eczema, and to identify the triggering allergen or irritant. Prevention, early diagnosis and intervention are important to avoid chronification, sickness absence, the need for retraining, and incapacity for work.

Hand eczema (or hand dermatitis) is an inflammatory skin disease localised to the hands, wrists or lower forearms (1). It is considered to be work-related when occupational exposure, in whole or in part, is the cause of the disorder. Work-related hand eczema should be suspected when the patient reports onset/exacerbation at work and improvement during holidays and/or weekends (2).

A Norwegian population-based study showed a prevalence of hand eczema of 11.3 %, of which just over one-third was work-related (3). Various data sources suggest that the disorder occurs frequently in service workers and offshore workers (4, 5). Figure 1 shows the proportion of the workforce treated by the specialist healthcare service for contact dermatitis in the period 2012–14.

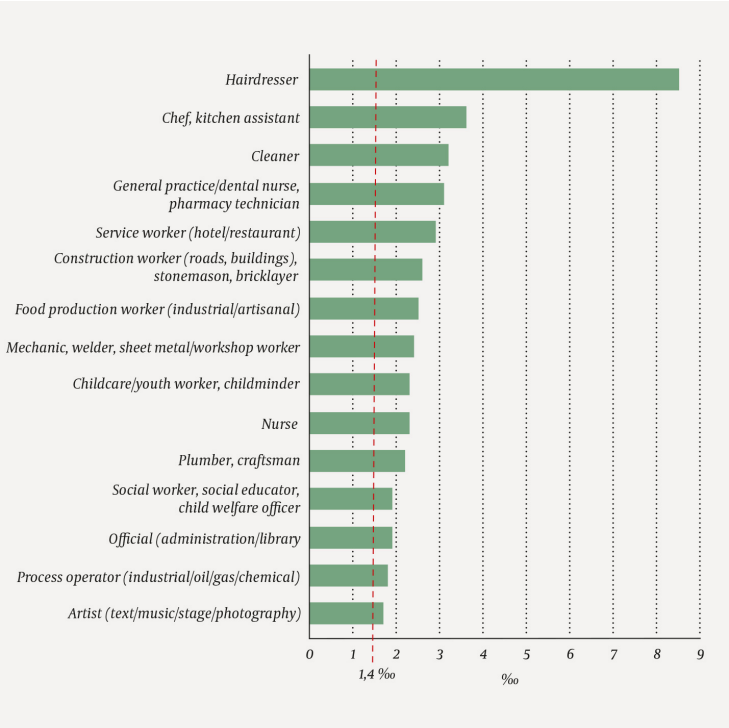


Figure 1 *Percentage of the workforce, born 1967–76, with a diagnosis of contact dermatitis in the specialist healthcare service in the period 2012–14 (15 most affected occupations shown). Number per 1 000 workers (‰). The red line shows the average for the Norwegian workforce. Source: National Surveillance System for Work Environment and Occupational Health], National Institute of Occupational Health. Data from the Norwegian Patient Registry have been used in this figure. The interpretation and reporting of these data are the sole responsibility of the authors, and no endorsement by the Norwegian Patient Registry is intended nor should be inferred*

This clinical review is based on a discretionary selection of articles plus the collective experience of the authors.

Clinical picture, risk factors and classification

Hand eczema can be classified on the basis of aetiology, morphology and/or localisation (1). It is also useful clinically to distinguish between acute and chronic eczema (1).

Acute hand eczema usually presents as erythema, oedema, vesicles and papules. The rash usually begins as pruritic millimetre-sized vesicles, often located on the palms and on the sides of the fingers.

Chronic hand eczema is characterised by erythema, oedema, skin thickening, scaling, fissures and erosions. Cases typically have a duration of more than three months, with three or more flares in the previous year, in the absence of any other underlying disease or infection and with no response to local steroid therapy (6).

Endogenous risk factors include changes in the skin barrier such as atopic eczema (7, 8). Mutation of the gene for filaggrin, a barrier protein in the skin, is a risk factor for both atopic eczema and chronic hand eczema (9).

Exogenous risk factors can be divided into two main groups: irritant and allergic hand eczema.

Irritant hand eczema is the result of an inflammatory reaction following exposure to chemical, physical and/or mechanical irritants. The commonest cause is wet work (Box 1) (10). Occupational groups that are particularly exposed to wet work include hairdressers, healthcare personnel, cleaners, kitchen/canteen workers, mechanics, construction workers and farmers (4, 11). Women and young workers tend to be most exposed (3, 4). Irritant hand eczema is a diagnosis of exclusion, and patients must be assessed for possible allergy-related causes of the eczema (2).

Box 1 Definition of wet work (10)

Wet work is work in which the hands:

- are in contact with water for two hours or more per day,
- are washed more than 20 times per day, or
- are covered by tight gloves for two hours or more per day

Allergic hand eczema occurs as a result of skin contact with a substance that triggers an immunological response, most often a cell-mediated immunological response (type IV). Frequent occupational allergens are hair dyes, preservatives, metals, rubber, formaldehyde, epoxy, acrylates and isocyanates (11). The most vulnerable occupational groups include hairdressers, mechanics, welders and dentists (11) (Figure 2).

Figure 2 *Contact eczema in a hairdresser. The skin is flaky and itchy and the upper layers are peeling away. The rash is caused either by an irritant reaction to a particular substance, by an allergic reaction or by a mixture of irritation and allergy. Photo: Science Photo Library/NTB scanpix*

Protein contact dermatitis is a subtype of allergic contact eczema. It is triggered by skin contact with a protein that initiates an IgE-mediated immunological response (type I) with subsequent development of eczema. The exact pathophysiological mechanism is unknown. The patient will report stinging, itching and burning seconds to minutes after exposure to the relevant protein. Protein contact dermatitis occurs in occupations involving wet work and frequent skin contact with proteins from food, animals and/or plants. Vulnerable occupational groups include chefs, fishermen, bakers, veterinarians and veterinary nurses (11).

Diagnosis

When work-related hand eczema is suspected, the aim is to identify the triggering allergen or irritant. The diagnosis is made through a thorough, targeted medical history, clinical examination and supplementary testing (2). This is a time-consuming process that requires collaboration between general practitioners, dermatologists, the occupational health service and/or occupational medicine departments. Patients should be referred promptly to the specialist healthcare service whenever work-related hand eczema is suspected.

MEDICAL HISTORY

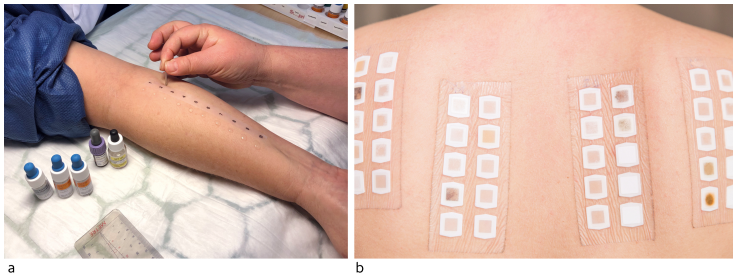
The occupational anamnesis maps the patient's occupational exposure to skin irritants and allergens in order to identify any association between occupational exposure and disease onset/ exacerbation and any improvement during time off work. The occupational anamnesis and systematic review of safety data sheets can often permit the diagnosis of work-related allergic hand eczema (12).

Safety data sheets contain information on hazards and recommended safety precautions when using chemicals. The employer is obliged to ensure that safety data sheets are available. Assistance from specialists in occupational medicine can be useful in interpreting these. The company occupational health service can provide information on exposure conditions, occupational hygiene measurements, workplace visits, adaptation of occupational tasks and relocation during the treatment phase.

The environmental anamnesis focuses on risk factors associated with the home and leisure activities. Cosmetics and personal hygiene products may contain allergenic substances. Caring for young children, gardening, and maintenance of vehicles and machinery can entail wet work. Hobbies can involve the handling of glue, paint, plants and tropical hardwoods. In various sporting activities such as handball, weightlifting, golf and tennis, players may come into contact with rubber-based allergens or resins (e.g. in the grips on golf clubs/tennis rackets). Climatic conditions such as humidity, heat, cold and UV light can also be contributing factors.

CLINICAL EXAMINATION AND SUPPLEMENTARY TESTING

The hands must be examined for signs of acute or chronic eczema. The patient may be tested using procedures such as epicutaneous testing, skin prick testing and/or blood IgE assays (Figure 3). In rare cases, a skin biopsy may be necessary to rule out other inflammatory skin diseases such as psoriasis. An asymmetric pruritic rash may raise clinical suspicion of dermatophytosis. Other common differential diagnoses include atopic eczema, scabies and palmoplantar pustulosis.



a b

Figure 3 *a) Skin prick testing. Photo: Regional Centre for Asthma, Allergy and Hypersensitivity, Oslo University Hospital. b) Epicutaneous testing. Photo: neeila/iStock*

Epicutaneous testing (patch testing) is used to diagnose allergic contact eczema in cases of chronic or recurrent hand eczema. The testing is conducted by applying patches to the patient's back bearing low concentrations of selected allergens. The patches must remain in place for 48 hours. The test material is selected based on the occupational and environmental anamnesis such that relevant contact allergens from both the home environment and the workplace are included. There are also test series available for various occupational exposures, such as a hairdressing series, an oil and cooling fluids series, a dental series, etc. Testing with the patient's own materials is performed when indicated (2).

Skin prick testing and specific IgE assays are used in cases of suspected protein contact dermatitis. Skin prick testing can be performed using standardised extracts or via the prick-by-prick test method with fresh materials, such as fish, fruit or vegetables.

When the triggering agent cannot be determined, it may (exceptionally) be necessary for the patient to go on sick leave as a test to clarify whether the eczema is work-related.

Treatment

The most important aspect of treatment is early intervention to identify and remove relevant irritants/allergens. We recommend following the guidelines available for the treatment of chronic hand eczema (13).

Prevention

The main objective of primary prevention is to ensure that the skin remains healthy in the work environment. Work-related hand eczema is best prevented by reducing exposure to skin irritants and allergenic substances, for example by replacing products that cause irritation. Information on risk factors and skin care can help with prevention in at-risk groups (2).

Proper use of gloves helps protect the hands when it is not possible to remove or replace harmful substances. The type of gloves that are appropriate will vary, and the company occupational health service can assist in finding the correct type. It is important to be aware that glove use may in itself cause hand eczema, either as a result of sensitisation to the glove material (e.g. thiurams, carbamates, latex) or because of the moist environment that the glove creates, so-called occlusion dermatitis. Using cotton gloves or bamboo gloves under tightfitting gloves can keep the hands dry (14).

The main goal of secondary prevention is early diagnosis and treatment to avoid a chronic and recurrent course. Suspected cases of work-related illness should be reported to the Norwegian Labour Inspection Authority (form 154b). The Labour Inspection Authority can visit workplaces and recommend preventive measures (5).

The aim of tertiary prevention is medical, occupational and social rehabilitation. Chronic hand eczema can lead to long-term sickness absence, the need for retraining and/or loss of the capacity to work (10). Persons with work-related hand eczema should apply to the Norwegian Labour and Welfare Administration to have the condition approved as an occupational illness. Making adjustments to the workplace may help the employee remain

in work. When this is not possible, retraining may be necessary.

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