Management of atopic dermatitis

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Introduction

Atopic dermatitis (AD) is a chronic, recurrent, inflammatory skin disease accompanied by pruritus, dry skin, and characteristic eczema. For the proper treatment of AD, accurate diagnosis according to the diagnostic criteria, identification of the aggravating factors, and evaluation of severity are necessary[1].

Treatment of AD requires a systematic, multidisciplinary approach, including skin moisturizing, topical anti-inflammatory treatment, identification and removal of deteriorating factors, and systemic treatment if necessary. Assessment of severity also helps with the treatment. The severity of the symptoms varies widely among patients, and step-by-step treatment according to the severity of symptoms should be provided[2-4].

Severity assessment

The Scoring Atopic Dermatitis (SCORAD) and Eczema Area and Severity Index (EASI) are used to assess the severity of AD.

1) SCORAD index

The evaluation consists of three categories which are as follows: skin lesion extent, lesion severity, and subjective symptoms.

The extent of skin lesions is expressed as 0%-100%, and the severity of lesions is graded from 0 to 3 for six types of lesions as follows: erythema, edema, oozing, excoriation, lichenification, and xerosis. The subjective symptom is assessed as 0-10 points for itching and sleep disorder, and these three items are added together according to the formula. It is possible to equilibrate to 0-103 points, with <15 points defined as mild; 15-40, as moderate; and >40, as severe[5].

2) Eczema Area and Severity Index (EASI)

The EASI is an easier and simpler method for assessing AD severity. It can be evaluated from 0 to 72 points, with 0 defined as clear; 0.1–1.0, almost clear; 1.1–7.0, mild; 7.1–21.0, moderate; 21.1–50.0, severe; and 50.1–72.0, very severe[6,7].

3) Physical severity of AD

The National Institute for Health and Clinical Excellence has simplified the severity of AD patients under the age of 12 years and classified them as mild, moderate, and severe (Table 1).

Table 1. Categories of physical severity of atopic eczema[8]

Clear	Normal skin, with no evidence of active atopic eczema
Mild	Areas of dry skin, infrequent itching (with or without small areas of redness)
Moderate	Areas of dry skin, frequent itching, and redness (with or without excoriation and localized skin thickening)
Severe	Widespread areas of dry skin, incessant itching, and redness (with or without excoriation, extensive skin thickening, bleeding, oozing, cracking, and alteration of pigmentation)

Treatment

Regardless of the severity and aggravation of the disease, the basic treatment of AD is the use of moisturizers and avoidance of exacerbating factors. Mild AD should be treated with topical steroids and calcineurin inhibitors to relieve lesions and antihistamines to relieve itching. For the treatment of moderate to severe AD, systemic agents and topical anti-inflammatory agents should be used as active treatments[9].

1) Maintenance skin care

AD patients have impaired skin-barrier function and have extensive xerosis. Applying an occlusive emollient to retain moisture after bathing in lukewarm water for 15–20 minutes will help to improve symptoms. Hydrophilic ointments of varying viscosity may be used depending on patient preference. Occlusive ointments often cause folliculitis because they interfere with the function of the sweat glands. In these cases, less occlusive ointments should be used.

Bathing and wet wrap therapy (WWT) increase the skin penetration ability of topical steroids. WWT can act as an effective protective barrier against continuous scratching, which can promote the healing of scratched skin. WWT is recommended for chronic sites that are severely affected or have no therapeutic response. The use of topical emollients after WWT is important to prevent severe dryness and cracking

after treatment. WWT should be performed under the supervision of a physician because of the risk of secondary infection[4,10].

2) Topical anti-inflammatory medications

Topical steroids and topical calcineurin inhibitors are commonly used medications. Topical steroids are the basis of anti-inflammatory therapy for the acute exacerbation of AD. Patients should be trained in topical steroid therapy to avoid possible side effects. Topical steroids are classified into seven groups according to their ability to contract blood vessels. High-potency topical steroids should not be used on thin folds of the face or skin and should be used on the trunk or limbs for a short period. Steroids with low potency can be used for long periods in the trunk or limbs in patients with chronic AD[11].

Topical calcineurin inhibitors inhibit the activation of T cells and reduce the allergic inflammatory response. Tacrolimus and pimecrolimus are used in patients with poor response to topical steroids, severe steroid anxiety, or dermatitis of the face and neck[12].

3) Systemic therapies

If no improvement is demonstrated with topical medication, systemic administration of antihistamines and steroids may be attempted. In addition, cyclosporine and IFN-γ have been tried in some patients.

Antihistamines are used to treat itchiness that does not improve with primary skin care. As itching is the starting point of a vicious cycle of AD, which leads to itching, scratching, and worsening of skin lesions, treatment of itching plays an important role in the treatment of AD. However, some patients do not respond to antihistamines because histamine is one of several mediators that cause skin itching. Diphenhydramine and hydroxyzine are sedatives and are effective when used before bedtime. The recently developed non-sedative antihistamines are effective in the treatment of some patients with AD or urticaria.

Although systemic steroids may improve symptoms rapidly at the time of administration, they are not recommended because they cause steroid dependence and may cause more severe rebound symptoms when discontinued. If used, they should be used over the shortest term possible.

Cyclosporine is a potent immunosuppressant and inhibits T-cell cytokine secretion. It can be used when topical agents are ineffective.

4) Avoiding triggers

It is essential to identify and eliminate aggravating factors in acute exacerbations and long-term management to prevent exacerbations.

① Irritants: Patients with AD are sensitive to various stimuli that cause itching and scratching. Common aggravating factors include soap and detergents, chemicals, tobacco smoke, rough clothing, and excessive temperature and humidity exposures. Patients with AD should use soap with neutral pH. New clothes should

be laundered to remove formaldehyde and other chemicals. As residual detergent can also be a stimulant, a liquid detergent rather than a powder detergent should be used, rinsing twice to thoroughly remove the detergent. When swimming, it is important to wash the chlorine after swimming and to moisturize sufficiently. Although ultraviolet light is beneficial to some AD patients, sunscreens with a high sun protection factor should be used to avoid burns.

② Foods: Approximately 40% of infants and young children with moderate to severe AD have food allergies. Food allergies in patients with AD often cause eczema, urticaria, wheezing, and nasal congestion. Although elimination of food antigens is important for clinical improvement, most of the common allergens (egg, milk, peanut, wheat, and soy) are difficult to avoid.

③ Aeroallergens: Aeroallergens such as house dust mites, fungi, animal dander, and pollens can cause acute exacerbation of AD after nasal or skin exposure. Avoiding aeroallergens can improve clinical symptoms of AD. In patients sensitized to house dust mites, the avoidance treatment should be applied by wrapping the bedding with a special cover for house dust mites, washing the bedding with hot water every week, not using carpet, and lowering the room humidity.

Conclusion

Skin care, avoiding aggravating factors, and proper drug use are the basic and effective methods for treating AD. However, patients and their families are prone to fatigue because AD is chronic or frequently recurring. Therefore, periodic outpatient visits and repeated patient and family education are important for the care of patients with AD.

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