Atopic dermatitis (AD) is a chronic inflammatory skin disease that causes itching. The prevalence of AD in China has increased during the past three decades. Congenital and environmental factors are considered to be involved in the pathogenesis of AD. These factors include skin barrier function defects and immunological abnormalities. In China, AD and eczema are regarded as different diseases, and the diagnosis of AD and eczema are often confused. We analyzed the clinical data of 2,662 adult and adolescent patients (≥12 years old) who had suffered from symmetrical eczema for more than two months. One third of the patients were diagnosed as AD, while two thirds were diagnosed as eczema. The patients’ clinical manifestations were quite heterogeneous. Based on the patients' clinical findings and the concept of AD, we proposed highly sensitive and specific Chinese criteria for adult/adolescent AD. Revised Chinese guidelines for AD were published in 2014. However, a number of problems can still arise during the treatment of AD.

Key words: atopic dermatitis, pathogenesis, diagnosis, treatment

Introduction

Atopic dermatitis (AD) and eczema are chronic inflammatory skin disease, which is the most common skin disease in China. The prevalence of childhood AD have been increased during past three decades in China. In 1998, a study in Shanghai had shown that the prevalence of AD in seven to twelve years old children was 0.46%1, while in 2012, the prevalence of AD in three to six years old children was 8.3% and the prevalence in urban area (10.2%) was much higher than in rural area (4.6%)2. However, no epidemiological data were available about the prevalence of adult and adolescent AD. A small scale study showed that the prevalence of eczema in adults was 7.5%3.

Pathogenesis of atopic dermatitis

Although the etiology of AD is unclear, mounting evidences suggest that the congenital factors and environmental factors are involved in the pathogenesis of AD. Mutations of gene encoding filaggrin (FLG) are considered as major predisposing factors for AD. FLG is one of the strongest genetic factors in a complex disease4. Loss-of-function mutations in FLG have been found in 10–50% of AD patients. The mutations are found in about 50% of moderate–severe patients with AD, while only 15% of patients with mild–moderate AD were found to have FLG mutations.

The allergens also play an important role. AD may be triggered and exacerbated upon exposure to allergens. Allergen–specific IgE antibodies were found in many patients with AD. Other
environmental factors such as colonization of *Staphylococcus aureus* (*S. aureus*) and stimulation of detergent components also play roles. Sodium lauryl sulfate (SLS) is a component of detergent. One study had shown that repeated SLS stimulation induced AD-like lesions and the expression of thymic stromal lymphopoietin (TSLP) in human skin\(^5\). However, we found that SLS couldn’t up-regulate TSLP protein expression in primary keratinocyte culture\(^6\).

**About diagnosis: eczema versus atopic dermatitis**

AD had a profound impact on patients’ quality of life. In China, AD and eczema are regarded as two diseases and the diagnosis of AD and eczema are often confused. We analyzed clinical data of 2,662 adult and adolescent patients (12 years old and over) with symmetrical eczema for more than two months. One third of these patients were diagnosed as AD while two thirds were diagnosed as eczema. We have performed a survey in 3,016 Chinese dermatologists about the diagnosis of patients with symmetrical eczematous dermatitis. The diagnosis of AD versus eczema was 1:9 in 48.5% dermatologists while it was 5:5 in only 2.5% dermatologists, suggesting an under-diagnosis of AD in China. In fact, AD and eczema are described as different diseases in most textbooks of dermatology.

**Propose of the Chinese criteria for adult/adolescent atopic dermatitis**

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<thead>
<tr>
<th>Table-1 Chinese criteria for adult/adolescent atopic dermatitis</th>
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<tr>
<td>Must have:</td>
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<td>Symmetrical eczema (dermatitis) more than 6 months(^a)</td>
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<td>Plus one or more of the following:</td>
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<td>1. Personal(^b) and/or family history(^c) of atopic diseases</td>
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<td>2. Elevated total serum IgE level and/or positive allergen-specific IgE and/or eosinophilia</td>
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\(a\) More than 6 months: persistent or recurrent eczema/dermatitis for more than 6 months
\(b\) Personal history of atopic diseases: allergic rhinitis and/or allergic asthma and/or allergic conjunctivitis
\(c\) Family history of atopic diseases: eczema/AD and/or allergic rhinitis and/or allergic asthma and/or allergic conjunctivitis in first, second or third relatives

Exclusion: hyper-IgE syndrome, WAS, Netherton syndrome, hypereosinophilic syndrome, Sezary disease, etc.

The treatment of AD includes patient education, anti-inflammation, and improving skin barrier function. Avoidance of triggers and use of emollients are recommended. Topical steroids and topical calcineurin inhibitors are two main anti-inflammatory treatments. Antibiotics are helpful in patients with secondary infection or with possible colonization of *S. aureus*. Systemic immunosuppressives, short-term systemic steroid and UV therapies are used in moderate to severe AD.

In clinical practice in China, we found too many patients treated with diet restraint without evidence. This may result in some negative consequences, such as malnutrition. Avoiding unnecessary diet restraint is essential. RAST and diet diary are two useful methods to find possible food allergens.
Topical steroid is the first line treatment for AD. In clinical practice, some patients are reluctant or even refuse to use topical steroids. We suggest that dermatologists should take time to explain to patients about topical steroid, such as its good efficacy and safety profile, short treatment period, low absorption of the drugs and shift from steroid to non-steroid treatment. By doing so, most patients will understand the treatment and will agree to use topical steroids.

Topical calcineurin inhibitors are the second line treatment, both tacrolimus ointment and pimecrolimus cream are available in China. Topical calcineurin inhibitors have less side-effect as comparing with topical steroids and are good choice for long-term treatment.

The use of system steroids and immunosuppressives are not common. Many dermatologists are very cautious about the use of systemic steroids and immunosuppressives. Some Chinese herbal drugs such as *tripterygium glycosides* are often used, which have immunosuppressive effects and also with several side-effects.

The Chinese Society of Dermatology has published the guideline for management of AD in 2008 and revised it in 2014. However, not all Chinese dermatologists know this guideline and use it in clinical practice. We need to help our dermatologists to use this guideline so as to improve the treatment of AD.

References