

# How to Cope with Allergic Diseases at Schools in Japan

—From the standpoint of a pediatric allergist—

JMAJ 52(3): 164–167, 2009

Motohiro EBISAWA \*<sup>1</sup>

## Abstract

The number of school children with allergic diseases is increasing, and various cares are considered necessary to secure the safe school lives of such children. Medical specialists and school officials developed a school life management certificate for children with allergic diseases, which serves as a tool for communication between medical facilities and schools in cases where such children need special care. Children with asthma require special attention during exercise, in dusty environments, when in contact with animals, during out-of-school activities involving overnight stay(s). Concerns for children with atopic dermatitis include stimulants that worsen skin eczema, such as perspiration, chlorine in swimming pools, and ultraviolet rays. School lunches are the most serious concern for children with food allergies. Even classes handling foodstuffs may cause health hazards, thus necessitating caution in this arena. Food allergies are the most frequent cause of anaphylaxis, but it should be noted that anaphylaxis may also occur after a combination of food and exercise or even after exercise alone. It is important that schools are aware of children with reliever drugs for anaphylaxis and asthmatic attacks.

**Key words** School, Allergic diseases, Bronchial asthma, Atopic dermatitis, Food allergy, Anaphylaxis

## Introduction

The Research Study Committee on Allergic Diseases of the Ministry of Education, Culture, Sports, Science and Technology reported on the prevalence rates of various allergic diseases among approximately 12 million school children at elementary, junior high, and senior high schools throughout Japan in 2004. According to this report, the prevalence was 5.7% for bronchial asthma, 5.5% for atopic dermatitis, 2.6% for food allergies, 0.14% for anaphylaxis, 9.2% for allergic rhinitis, and 3.5% for allergic conjunctivitis. Although it is presumed that these prevalence rates failed to cover mild cases of atopic dermatitis and allergic rhinitis or conjunctivitis, children

who have some type of allergic disease seem to account for more than 20% of all school children, even when overlapping cases of multiple allergic diseases are discounted. It is likely that every class has some children with allergic diseases, but the understanding of and countermeasures against these diseases by schools remain insufficient.

This paper describes how children with allergic diseases should be cared at school, and discusses the direction of future efforts in Japan.

## Bronchial Asthma

Problematic aspects of school life for children with bronchial asthma include 1) exercise in physical education class and club activities, 2) contact with animals and activities in dusty

\*<sup>1</sup> Director of Allergy, Clinical Research Center for Allergology and Rheumatology, National Hospital Organization Sagamihara National Hospital, Sagamihara, Japan (m-ebisawa@sagamihara-hosp.gr.jp).

This is a revised English version of a paper originally published in the Journal of the Japan Medical Association (Separate Vol.137, No.4, 2008, pages 42–44). The article is based on a presentation made at the school physician symposium “Allergic Diseases at Schools: Support and Management” held at the JMA hall on February 23, 2008.

environments, and 3) out-of-school activities requiring overnight stay(s). In regard to the first item, the phenomenon of exercise-induced asthma becomes clinically apparent as the severity of asthma increases. In particular, intense exercise that continues for a prolonged period of time, including running and soccer, is more likely to induce asthma. Concerning the second item, some asthmatic children also are allergic to animals and dusty environments, such as may occur when sweeping the classroom, may cause asthmatic attacks. Third, out-of-school activities involving overnight stay(s) are often associated with asthmatic attacks induced by mites or dusty environments.

Asthmatic children are usually able to participate in activities just like healthy children when they are not having an attack. However, once asthmatic attacks occur, they can create an emergency situation. Asthma is better controlled than previously due to improved drug treatments including inhaled steroid therapy. However, some patients can remain stable only with intensive treatment. It is important for school teachers to cooperate with parents in matters such as the evaluation of symptom control, possible interference with school life, and the needed response to asthmatic attacks. The use of a spacer with a bronchodilator inhaler ( $\beta_2$ -agonist) is required in emergency situations, but basically the decision is left to the patient. It is also necessary for the school to know whether the patient generally uses medicine during an asthmatic attack at school.

### Atopic Dermatitis

The aspects of school life problematic to children with atopic dermatitis include 1) physical education classes involving swimming or prolonged activities under ultraviolet light, 2) contact with animals, and 3) post-perspiration status. In terms of the first item, the chlorine disinfectant used in swimming pools and strong ultraviolet rays are known to aggravate atopic dermatitis. The second item is problematic because children with atopic dermatitis sometimes have concomitant animal allergies. Third, perspiration is a factor that can aggravate the symptoms of atopic dermatitis, and is a great concern particularly in Japanese summer. If a shower is available after exercising, perspiration-induced aggravation of symptoms can be prevented to a considerable

degree.

There has been a remarkable progress in the management of atopic dermatitis, through the use of topical treatment with steroids or tacrolimus ointment. If the patient has symptoms that cause difficulties in school life, it is important to talk with his or her parent(s) and encourage the implementation of appropriate treatment. Caution is necessary because the patient may become the target of bullying or avoid attending school.

### Food Allergy

Most cases of food allergy in school-aged children are of the immediate type. Disease types of food allergy among school children are classified as follows: immediate-type allergy, oral allergy syndrome, and food-dependent exercise-induced anaphylaxis. In school-aged children, food allergies seldom lead to the aggravation of atopic dermatitis. Various agents cause food allergies, most commonly cow's milk, hen's eggs, and wheat. Buckwheat, peanuts, crustaceans, and fruits can also be causative agents. Food allergies in school children should be diagnosed on the basis of objective symptoms and the results of oral food challenge tests. Elimination of the causative agent should not be advocated simply because the patient is positive for IgE antibody against foods. This indicates the need for an appropriate response from healthcare professionals to food allergies and a proper understanding of the allergy by the parents/guardians.

The most concern in school life is the school lunch service, which is common in Japan. The presence or absence of specific changes in the school-provided lunch for children with food allergies is mainly dependent on the prefectural or municipal government. Essentially, every school child is to be provided with the same lunch. However, it is common in schools for a child in the class to bring a bag lunch because of his or her food allergy while others in the class have the lunch provided by the school. Improvement in the response to food allergies should be started by promoting an understanding of food allergies among school teachers. With this background, the range of available responses to food allergies should be determined according to the actual situation of each school lunch center and kitchen. It is true that school lunch-related health hazards

occur almost every day across the country. In addition to school lunches, health hazards may be caused in children with food allergies in the school life, e.g., while handling foodstuffs or recycling milk cartons in a domestic science class. In addition, some children with food allergies may not be able to participate in school trips, which can be once-in-a-lifetime events. Such cases have actually been found by surveys, regardless of whether they were conducted from the patient's viewpoint or from the school's viewpoint.

Thus, although many problems remain to be solved, it is expected that improvements will be achieved at the level of diagnosis and treatment of food allergies, and that accurate knowledge of food allergies will be spread among parents and school teachers, thereby improving the current situation.

## Anaphylaxis

Anaphylaxis is a critical type of allergic reaction that may be life-threatening and require emergency response. The most common cause of anaphylaxis is food allergy. In addition, the other causes cited include bee stings, exercise, and food plus exercise (food-dependent exercise-induced anaphylaxis). Since the prevalence rate of anaphylaxis is 0.14%, children with anaphylaxis are likely to be present in almost every school.

**Table 1 Current status of measures against allergies at school**

1) Rapid increase in schoolchildren with allergic diseases → Preparation of emergency measures at school → Protection of basic human rights of children with allergic diseases
2) Rapid increase in various allergic diseases → Insufficient recognition by the school and knowledge of teachers
3) If the measures were based on the report from the child's guardian → It is possible that the subjective view of the guardian may be included, or the request is excessive.
4) Differences in response among different schools depending on the policy and facility of the school and the knowledge and preparedness of teachers → Disparity and confusion among regions, schools, and classes

The most dangerous symptom of anaphylaxis is difficulty in breathing (laryngeal edema, wheezing, etc.), involving the respiratory system. The first thing school teachers should do is to understand the patient's symptoms and evaluate the severity of illness. However, emergency responses (where to transfer the patient, making contact with a parent/guardian, etc.) should be determined with the parents/guardians in advance. Unfortunately, this is not necessarily current procedure in all cases.

The most effective therapy for anaphylaxis is self-injection of adrenaline (EpiPen®). However, the efficacy of this therapy has not yet been thoroughly recognized by healthcare providers, and therefore the dissemination of reliable information is indispensable. Although the use of EpiPen® by the patient him- or herself as well as by the parent/guardian is permitted, it is also recommended that the drug be stored at school and be used by a third person only as an act of necessity.

## Allergic Rhinitis and Conjunctivitis

For children with allergic rhinitis or conjunctivitis, considerations as to outdoor activities are necessary during the season when Japanese cedar pollen is prevalent. Chlorine disinfectant in swimming

**Table 2 Solutions to the problems**

1) Provision by the medical facility of accurate information to the school → School Life Management Certificate (for Allergic Diseases)
2) The physician in charge should specify problems involved in school life and point out the need for special considerations
3) Raising the level of knowledge of the school officials concerning allergic diseases → Development of Response Manual for School • Dissemination of knowledge regarding allergic diseases • Explanation of the School Life Management Certificate (for Allergic Diseases)
4) Emergency response → Management and use of remedies for asthmatic attacks and EpiPen®
5) Respecting the rights of children with allergic diseases → Provision of school lunch to all school children and securing participation of all school children in school events (ideal goal)

---

pool water often exerts a harmful effect on the conjunctiva in children with allergic conjunctivitis. It is important to prevent such harm in these children by having them wear swimming goggles. Antihistamines are often used for the treatment of both conditions. Since prescriptions of drugs unlikely to cause drowsiness are available, this issue should be borne in mind when prescribing drugs for these conditions.

### Future Perspective

---

The above-mentioned issues are referred to in “the Guidelines for the Treatment of Allergic Diseases in Schools” sent from the Japanese

Society of School Health to education boards nationwide in May 2008. It is expected that the major strategy, “School Life Management Certificate (for Allergic Diseases),” be utilized widely as a communication tool between the physician in charge and the school. The most important measures against allergies at schools involve accurate diagnosis by the physician and appropriate guidance for the patient and his or her guardian. Problems underlying the concept of the School Life Management Certificate (for Allergic Diseases) and solutions to the problems are summarized in Tables 1 and 2. It is desirable that measures against allergies at school be further improved in the future.

---

### References

1. Japanese Society of Pediatric Allergy and Clinical Immunology. 2005 Pediatric Bronchial Asthma Treatment and Management Guidelines. In: Morikawa A, Nishima S, ed. Tokyo: Kyowa Kikaku; 2005. (in Japanese)
2. Ebisawa M. Response to food allergy—2005 Guide to diagnosis and treatment of food allergy by the Ministry of Health, Labor, and Welfare Science Research Group. *Arerugi*. 2006;55:107–114. (in Japanese)