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Invited review article

Japanese guidelines for occupational allergic diseases 2017☆

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ABSTRACT

In 2013, a guideline for occupational allergic diseases was published for the first time in Japan. Occupational allergic diseases are likely to worsen or become intractable as a result of continuous exposure to high concentrations of causative antigens, and are socioeconomically important diseases with which the patients might sometimes lose jobs due to work interruptions. Guidelines for occupational allergic diseases have been published in many countries. This guideline consists of six chapters about occupational asthma, occupational allergic rhinitis, occupational skin diseases, hypersensitivity pneumonitis and occupational anaphylaxis shock, and legal aspects of these diseases. The guideline is characterized with the following basic structure: Clinical Questions (CQs) are set with reference to Minds (Medical Information Network Distribution Service), statements by the committee are correspondingly listed, recommended grades and evidence levels are defined, and then descriptions and references are indicated.

1. Significance and characteristics

A large number of case reports have been accumulated on occupational allergic diseases. In some cases, such as asthma caused by amorphophallus konjac or ascidian, improvement of working environment based on evidence from epidemiologic studies and analyses of antigens resulted in reduction in asthma cases at the workplace. However, because of the occupational features of the diseases, only case reports have been presented in many cases. Although guidelines for individual allergic diseases have been published by allergologic associations, the descriptions of occupational factors are generally minimal. In fact, guideline for diagnosis and management of occupational allergic diseases has not been developed.

If a worker with an occupational allergic disease doesn't consider it an occupational disease, or if an affected workers bear it and take no measures or treatment, extensive exposure at the workplace will persist, causing the disease to worsen or become intractable. Depending on the circumstances, patients might lose their job and therefore face economic difficulties. Therefore, it is extremely important to identify occupational allergic disease cases in their early stages and take appropriate preventive measures for the social lives of patients. In Europe and the USA, several guidelines for occupational allergic diseases have been published. It is extremely significant that the guideline for diagnosis and management of occupational allergic diseases have been published for the first time in Japan.[1]

☆ This article is an updated version of "Japanese guideline for occupational allergic diseases 2014" published in Allergol Int 2014:63:421–42.

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This guideline is designed to assist healthcare professionals engaging in ordinary diagnosis and management of allergic diseases to practice early detection and treatment and early prevention in patients with allergic diseases induced and worsened by occupational factors. We hope that this guideline will be used for ordinary diagnosis and management of occupational allergic diseases and help the patients.

The guideline has a basic structure in which Clinical Questions (CQ) are set with reference to Minds (Medical Information Network Distribution Service), statements by the committee are listed, recommendation grades and evidence levels are defined, descriptions and references are indicated. Also, legal aspects are written in full.

As for occupational allergic diseases, because new substances have been continually produced due to technical innovation, and working environments have been changing due to changes in industrial structures, new occupational asthmas can always arise. In the future, we will continue to revise the guideline every three years, in order to maintain a high level of evidence for the guideline.

In this paper, recommended grades are written in parentheses following each statement, as shown in Table 1.

2. Occupational asthmas

2.1. Definitions and classifications

CQ1: *What are the definitions and classifications of occupational asthmas? (Fig. 1)*

Asthmas related to occupations are called "work-related asthmas (WRAs)." These can be classified into "occupational asthmas (OAs)" and "work-aggravated (exacerbated) asthmas." OAs are those related to occupations and caused by antigens existing in the workplace. OAs can be further divided into "sensitizer-induced asthmas," which are associated with an immunological and allergic mechanism, and "irritant-induced asthmas," which occur due to aspiration of a large quantity of an irritant at the workplace. Work-aggravated (exacerbated) asthmas are those preexisted and aggravated by gas, cool air, or dust aspirated at the workplace.[2] In Japan, work-aggravated (exacerbated) asthmas are generally not included in OAs. [Minds Grade A]

2.2. Prevalence

CQ2: *What is the population attributable risk for occupational factors in adult asthmas?*

The proportion of population-attributable risk of occupational factors in adult asthmas is approximately 15%.[3]

CQ3: *How does the prevalence by occupation group in cross-sectional studies?*

High prevalence rates are found in painters (isocyanate); bread and needle makers; nurses; those who work with chemicals; animal handlers; welders; those working in food-processing, and lumbering; and so forth (Table 2).

2.3. Antigens

CQ4: *What are causative antigens?*

Causative antigens are divided into antigens of high molecular weight, such as those derived from animals and plants, and antigens of low molecular weight, such as chemicals and metals. [A]

Table 1
Recommended grades.

Grades	Meaning
A	Strongly recommended to apply
B	Recommended to apply
C1	Should apply
C2	Should not apply
D	Recommended not to apply

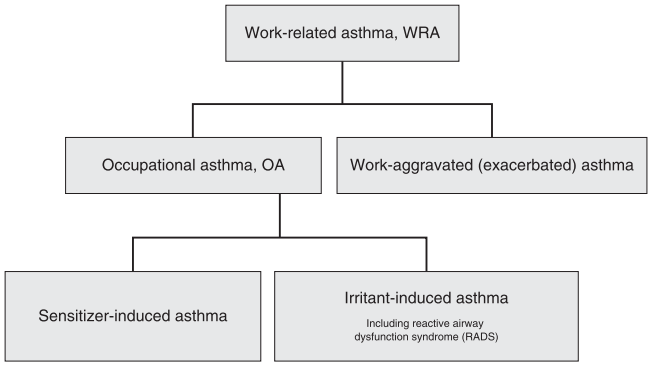

Fig. 1. Work-related asthmas and their classifications. From reference.[1]

Table 2
Incidence of occupational asthmas in main occupational groups according to cross-sectional studies.

Occupation/exposed antigen	Number of cases	Incidence (%)	Country
Snow crab processors	303	15.6	Canada
Guar gum (natural polysaccharide)	151	3.0	Canada
Painters (isocyanate)	730	7.1 (All subjects were non-smokers.)	Italy
Poultry workers	134	11.0	South Africa
Rats allergens	113	4.4	France
Natural rubber latex (health care workers in general hospital)	196	7.1	Italy
Florists	128	14.1	USA
Supermarket bakery workers	66	9.0	UK
Strawberry growing industry workers	43	4.7	Japan
Oyster shucker (Sea squirt)	250–417	18.0–36.0	Japan

Adapted from reference.[4]

CQ5: *What is the standard for a causative antigen designation?*

For antigens reported in Japan, the evidence levels are defined as shown in Table 3 and are written as individual causative substances (Table 4). As for epidemiologic studies, cases that the prevalence in specific occupational group is reported were made "Present."

CQ6: *What types of antigens in conventional OAs were most common?*

Substances derived from animals or plants. [C1]

CQ7: *What antigens have increased recently?*

Minerals and low molecular weight substances.[2,4] [C1]

CQ8: *What are the problems in OAs caused by chemicals?*

Because the specific immunoglobulin E (IgE) antibody cannot be easily detected, diagnosis is difficult.[5] [A]

CQ9: *What is the influence of genetics?*

The disease occurs as a result of some interaction between multiple genetic factors and environmental factors. It can be expected that understanding molecular pathologic conditions of OAs will advance by identifying genetic factors and that preventive measures such as setting environmental exposure limits according to individual onset risks will be practiced. [C1]

Table 3
Classification of evidence levels.

Panel consensus	Evidence levels	
	Overseas	Japan
Epidemiologic studies and analyses of antigens have been published	(1)	(1)
Multiple case reports have been presented	(2)	(2)
One case is reported	(3)	(3)