3 Promoting Understanding of Chemical Sensitivity

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3.1 MEDICAL INSURANCE IN JAPAN

In Japan in a notification from the Ministry of Health, Labor, and Welfare, the name of the disease “chemical sensitivity (CS)” was newly exhibited on October 1, 2009 (MEDIS-DC, concerning the standard name in a disease roster), and was formally registered as the name of a disease for insurance purposes. The name may be applied to everyday medical situations. This determination is likely to be good news for patients who are concerned about this illness.

After CS was adopted as the health insurance name of a disease, the official support organization of patients, such as medical treatment, compensation for absence from work, and disability pension, improved greatly. Private insurance compensation payment is going smoothly, without CS being ignored by insurance companies. Of course, for CS patients, future problems, such as an escape facility at the time of neighboring air pollution, nursing care, and entrance equipment for elderly people, remain.

In Japan at present, authorization of CS as the cause of a workman’s accident is still a somewhat difficult problem. The judgment committee determines the cause of the accident. The committees have not advanced beyond the idea of authorization for a physically handicapped person due to loss of a hand or a foot. One judgment committee even states that there is no chronic poisoning except for heavy metal poisoning. They cannot seem to understand alcoholism, glue sniffing, benzene poisoning, pesticide poisoning, drug addiction, and so forth. It becomes impossible for a patient suffering from CS to work in an ordinary office. Judgment committee members with common sense are needed for the protection of workers’ lives.

3.2 UNDERSTANDING OF CS AT THE JUDICIAL LEVEL

Japanese judges are fundamentally very serious and excellent. They are tackling the problem of CS earnestly and the lives of many patients have been saved. Of course, the common sense of the time and the social situation form part of the legal decision. Naturally it is impossible to entrust all the CS patients’ relief to a judge. If a
judge gains further understanding of CS, a patient will experience greater relief. For a judge to understand the CS problem deeply, a medical staff’s efforts are required.

3.3 EDUCATION

3.3.1 SPECIFIC EDUCATION OF MEDICAL DOCTORS

The classic concept of poisoning that doctors have been learning is important. However, it has not included that the consequences of acute intoxication and chronic intoxication are similar. As a result, many doctors do not fully understand chronic intoxication. For example, an understanding of chronic insecticide intoxication is still difficult for doctors at present. Moreover, the dose–response curve, which shows the relationship between the given dose of a chemical substance and the appearance of symptoms, has been commonly considered as polytonic rather than monotonic, that is, not one curve but many.

As an example, aspirin in the usual daily use amounts alleviates fever and has an analgesic action. However, a small dosage has also been shown to prevent thrombus formation. In the amount used for an analgesic action, a thrombus prevention action is not expected. Thus, the medicinal action differs from the usual dose to a small dose. Furthermore, a very small quantity of a chemical substance is enough to cause an endocrine disruption, aggravate an allergy, and induce CS. Also, the dose–response curve is not a sigmoid curve in classic poisoning studies but a bell shaped curve. If the chemical substance is much quantity, the action of hyper sensitivity is inhibited. The stimulating action much suppressed in high doses of chemicals.

A very small quantity of a chemical substance also causes inborn errors of metabolism, developmental disease, and behavioral abnormalities. It has been clearly proved experimentally that a very small quantity of an organophosphorus insecticide causes a developmental disorder. The doctors engaged in clinical work are well aware of the latest abnormal increase of a developmental disorder [1]. A very small quantity of a chemical substance can cause various kinds of diseases. Moreover, a single chemical substance has many actions. Invasion of chemical substances into everyday life is a concern. Education regarding chemical substances in the environment is required for doctors.

3.3.2 SPECIFIC EDUCATION FOR DENTISTS

Many patients react to a curative medicine. A dental care agent contains a small quantity, resulting in a sensitive reaction. General anesthesia is a kind of acute intoxication. Therefore, in general anesthesia, a sensitive reaction does not appear easily. Anesthesia using xenon should be considered for patients who can never receive general anesthesia.

Consideration of allergy to metal is important. Although dentists request patch tests from dermatologists during dental care using metals, it is possible for them to carry these out on their own. To test for a hyperreaction to cement and metal, a bit of material may be placed for 10 minutes under a patient’s tongue and the patient
observed for half a day to one day. To avoid a mechanical stimulus to the mucous membrane, the test materials are soaked in water before the test.

A patient sometimes shows a sensitive reaction to a topical anesthetic. It can be difficult to determine whether the chemical substance that causes the reaction is a component of the medicine itself or an additive.

At the time a sensitive reaction occurs, oxygen inhalation is the most effective treatment. It is common for the oxygen tolerance of CS patients to be low. Although extensive inhalation is needed at the time of anaphylaxis, 1–2 liters per minute of oxygen inhalation are usually recommended as soon as a reaction occurs. After consultations with a patient regarding a painkiller and an antibiotic according to a particular situation, the primary healthcare provider refer to the doctor or the dentist.

The indoor air of a dental clinic is usually polluted. Shortening a patient’s length of stay in the waiting room as much as possible is required.

### 3.3.3 Specific Education for the Healthcare Team

Present-day medicine is team medical treatment. The goals of treatment of CS cannot be achieved only by a doctor’s efforts. Cooperative efforts with a pharmacist, a nurse, an inspecting engineer, a diettian, and an oral hygienist are important.

A patient with CS also often shows a sensitive reaction to a medicine. A patient may react to the active ingredient of a medicine, or to an additive. Pharmacists need to pay attention to patients’ complaints just as doctors do. There is a tendency for a CS patient’s detoxification function to be slower than that of an unaffected person. It is better to begin administering the medication in a small quantity except in an emergency.

When the patient with CS reacts to ethyl alcohol, chlorhexidine gluconate or benzalkonium chloride should be used. The patient often has a food allergy. Food additives and drinking water should also be considered. It is better for an inpatient to be hospitalized in a single room where ventilation by opening a window is possible. Nutritional support to the patient is important.

### 3.3.4 Patient Education for a Comfortable Daily Life

The present environment is filled with mental, physical, and chemical stressors. CS patients need to lower the total amount of environmental stressors.

### 3.3.5 Education of Laypersons

It is our duty to teach laypersons about current environmental pollution. Increases in inborn errors of metabolism, developmental disorders, anomalous behavior, and disorders of the immune system are increasing. The environmental pollutant which is dangerous for a CS patient is dangerous for a laypeople [1,2]. The power of laypersons in instigating change in company and government policies is very important.
ENDNOTES
