

ALLERGY IN JAPAN*

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THE status, concepts, and scope of allergy in Japan today present striking contrasts to allergy as we know it in the United States. Numerous differences are evident in environment, types of allergic conditions, and methods of treatment. These differences are apparent from the study of a variety of material. Sources of information were personal interviews with leading Japanese physicians and visits to medical schools, hospitals, and libraries. Also included was an examination of over forty Japanese medical books, reprints, and reviews which were interpreted by a Japanese physician. Individual patient records and reports of series of allergy cases were found in the medical literature.

On the main Japanese Islands there are seven Imperial University Medical Schools. The case reports of allergy patients were written for the most part by physicians associated with these schools. In addition there are about eighteen other medical schools which are either smaller, private, or have a relatively short course of instruction. Incidentally, many of the latter do not even require a high school education prior to admission. The Japanese physicians who were consulted personally were either chiefs of large medical services or members of teaching staffs at the Japanese Imperial Medical Schools in Osaka and Kyoto. The literature available to Japanese physicians seemed to be entirely in German or Japanese. A notable exception was Tuft's *Clinical Allergy*.

The data obtained in this study were widely varied in nature and necessarily incomplete. The extensive published material available to the Japanese medical profession is in sharp contrast to their inadequate use of this material in actual practice. No active allergy clinics were seen in operation. Even though Japanese physicians are aware of the influence of environment, of the theory of specific sensitivity, and of treatment by hyposensitization, the clinical application of this knowledge appeared to be most limited.

Differences in environment were most striking and presented marked contrasts to our environment in the United States. These differences are in the topography of the country with its relation to plant life, individual home surroundings, and diet.

In considering first the general nature and topography of the country we find some pertinent facts. The main Japanese Islands have a total area of about 140,000 square miles. On these Japanese home islands live 70,000,000 people as contrasted to the United States, where 140,000,000 people live on about 3,000,000 square miles of land. Thus the area of Japan is almost the same as the area of the state of Montana, or one-twentieth the total size of the United States.

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Approximately 50 per cent of Japan is forest land. Thirty-five per cent of the remainder is mountainous and unsuitable for plant life. Only the remaining 15 per cent is under cultivation. One-half of this cultivated area consists of rice fields. Most of Japan has a rugged terrain and steep slopes which set definite limits to the tillable land. Erosion from the high rainfall which is generally prevalent further prevents the development of a productive soil. The cultivated areas may be divided according to their location. Just below the rough, mountainous terrain is the first upland cultivated area which is 'unterraeed. This area grows small grains and grasses. The next lower upland section is terraced and here are produced potatoes, tree fruits, tea, rice, mulberries and vegetables. The next area is the important lowland area in which there is a richer alluvial soil suitable for rice, wheat, barley, and, on the southern portions, citrus fruits. These alluvial soils in the lowlands produce the bulk of the food for the population. Thus, it is readily seen that there are but limited areas suitable for the growth of ragweed. In fact, there was no evidence available from an agricultural standpoint to indicate that grass or ragweed were important factors causing allergic conditions.

The second major factor to be considered is that of home surroundings. House dust does not appear to be an important cause of allergic symptoms among the Japanese. The elements which we consider as contributing to the formation of house dust are to a great extent entirely lacking. If we assume that house dust is an end product of the deterioration of cotton, wool, feathers, kapok, and animal danders, then an examination of Japanese homes finds these materials essentially absent. A typical Japanese living room has no drapes, rugs, pillows, upholstered furniture, or animal pets. These rooms thus approach our concept of a dust-free environment. The bedrooms do not have beds or mattresses. Cotton quilts are placed on the floor and the small pillows are frequently of straw. During the daytime these quilts are folded up and placed in bureau drawers or cupboards. There is usually considerable air circulating through the houses due to their construction and thus house dust cannot accumulate easily.

A study of case reports indicates that sensitivity to dust is rarely considered. Most series of tests do not include house dust nor is it used in treatment to any extent. Three separate reports covering over 200 patients with asthma mention only a few sensitive to house dust extract. However, Japanese physicians are aware that house dust is an important factor in causing allergic conditions in this country. Thus with house dust and ragweed practically nonexistent in Japan the risks of developing nasal or respiratory allergic symptoms are considerably decreased.

Japanese homes are cold in winter compared with our American homes. The main source of heat is usually from charcoal which is burned in open braziers. As a result the Japanese are consistently exposed to lower temperatures. Cases of angioneurotic edema are mentioned as being due to exposure to cold.

Turning now to diet, as the third major factor, we find that the most frequent allergic condition recognized in Japan is urticaria. This is far more

common than hay fever or asthma. Reports indicate that urticaria was attributed to foods even before there was any knowledge of the allergic state. The most common foods believed to cause urticaria are pork, milk, eggs, lobster, crab, mackerel, tuna, and bonito. Another discussion of urticaria indicated that it has been associated with liver function, spastic intestinal tract, and constipation. A series of fifty cases of urticaria have been reported with the following positive tests: horse meat, milk, crab, lobster, beef, bonito, tuna, sardines, spinach, *Aspergillus niger*, oyster, and bluefish. Treatment for urticaria was mostly of a nonspecific nature.

Seasonal hay fever due to ragweed is not mentioned in the Japanese medical literature. Possibly ragweed has merely not been introduced in Japan, though the 15 per cent of cultivated land is worked so intensively that hardly any plant life grows that is not of an edible nature. The shaded forest areas and the cold rocky, mountainous regions are apparently unsuitable for the growth of ragweed. No pollen counts were recorded. Case histories indicate that when Japanese developed hay fever in the United States due to grasses or ragweed the symptoms subsided after their return to Japan. These cases were not skin tested and no specific cause or seasonal relationship was noted. Plantain is found on Okinawa and Formosa only. The important and most common trees found in Japan are birch, ash, poplar, elm, oak, and sorrel. No skin tests with these pollens had been done.

Professor Tsuji of the Osaka Imperial University Medical School has done the most work on asthma in Japan. Among his cases there was one patient with asthma due to the inhalation of silk worm cocoon. He also reported an instance of asthma following infestation with *Ancylostoma duodenale* which cleared after elimination of the parasite. Dr. Nishuma tested a series of asthma patients with 160 allergen extracts and reported that 90 per cent were positive to *Ascaris*. He tested eighty subjects with asthma with 100 allergen extracts using Coca's solution, and he found positive tests to eggs, milk, salmon, tuna, mackerel, sardine, beef, pork, horse meat, strawberries, spinach, bamboo shoots, tomatoes, dust, and mold. In a number of instances he found that exposure to the foods produced attacks and elimination or avoidance resulted in relief of symptoms. Professor Katsunuma of the Nagoya Imperial University Medical School skin tested eighty patients with asthma. He reported that 48 per cent were positive. Of this group 24 per cent were positive to molds, 18 per cent to foods, 13 per cent to animal epidermis, 5 per cent to bacteria, 5 per cent to plants, *Cryptomeria*, rubber, and drugs. Dr. Suzuki tested forty-three patients with asthma. Forty-six per cent had positive tests. Five per cent of these patients were positive to one allergen, 11 per cent were positive to cat, bacteria, milk, and insulin, and 18 per cent were sensitive to burdock.

There are numerous articles of diet in Japan that are rarely used in this country. Among these are a wide variety of seafood including shark, whale, carp, octopus, and snails. Roots, millet, herbs, ferns, fungus, and bamboo shoots are also eaten.

There is evidence in the Japanese literature that the allergists are familiar with specific hyposensitization treatment. On the other hand, considerable em-

phasis is placed on nonspecific therapy. In treating with specific allergen extracts they use dilutions considerably smaller than ours. Suggestions are made to take 0.1 c.c. of a concentrated extract and dilute one million times and then dilute this one million times. There are numerous methods of nonspecific treatment. The literature states that the purpose of this treatment is to produce local swelling and a rise in temperature so that complement and antitoxin will be produced. Whole milk is used either subcutaneously or intramuscularly beginning with 1 c.c. to 5 c.c. every five days. There are also Japanese and German casein preparations called Eryosan, Kaseinol, Caseosan, and Aoran. Vegetable protein preparations are also used. Other preparations are peptone, horse serum, autogenous blood, and tuberculin. Combined allergen mixtures are also used containing horse serum, animal lipoids, and bacterial products. Injections of protein from carp are also frequently used. These preparations are marketed under the names of Erstin, Multi, Omnin, and Ogardin. Serous fluid withdrawn from the pleura, abdomen, and joints is used in treatment. Purulent discharges sterilized with heat and mixed with chloroform, Ringer's, and Lugol's solution are also used in treatment.

Vasomotor rhinitis occurs in Japan and two series of cases were found in the literature. Dr. Takahashi examined and reported seventy-nine patients with vasomotor rhinitis of which sixty-two were males and seventeen were females. He used thirty-seven different extracts in testing. Fifty-one patients had a family history of other allergies, such as asthma, urticaria, eczema, and migraine. Professor Fuzizawa reported twelve subjects with vasomotor rhinitis with 70 per cent having hereditary allergic factors.

SUMMARY

These observations indicate that allergy in Japan is in striking contrast to allergy in the United States. The climate and general topography of the country are such that grasses and ragweed are not important factors in causing allergic symptoms. Physicians in practice outside of medical schools do not use, as a rule, specific methods of hyposensitization. Nonspecific therapy is more generally available and more widely practiced. Urticaria is the most prevalent allergic condition. No records of seasonal hay fever were noted. House dust is not an important cause of allergic symptoms. Eggs, milk, wheat, and chocolate are not commonly eaten, while fish and rice are the staple articles of diet among the greatest number of Japanese. Adequate medical literature on allergy is available but the clinical application of this knowledge is limited.